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TUBERCULOUS MENINGITIS IN CHILDREN

A Preliminary Report of Its Treatment With Streptomycin and "Promizole"

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Sulfones and streptomycin are the first therapeutic agents to provide encouraging results in the management of previously fatal forms of tuberculosis. Since 1944, "promizole" (4,2′-diaminophenyl-5′-thiazolyl sulfone) has been used in the Chest Clinic of the Children's Medical Service, Bellevue Hospital.[1] The use of "promizole' 'in miliary tuberculosis has produced encouraging results. Of 7 patients treated for more than a month, 5 are living and well. Three of these patients have been followed more than three years with no recurrence of the disease and no new manifestations of hematogenous dissemination. However, treatment of tuberculous meningitis with "promizole" alone was unsuccessful. Five successive patients died six to twenty-five days after treatment was begun, and pathologic examination of the brains in 2 cases showed no demonstrable retardation of the disease.

Cooke, Dunphy and Blake [2] were the first to report the use of streptomycin intrathecally in human tuberculous meningitis. The patient, an infant, has survived thirty months since treatment was started but is now mentally retarded and probably deaf. Krafchik's [3] patient, also an infant, relapsed ten months after treatment was instituted. A two month course of streptomycin was repeated, and the patient remained well twenty-one months after the original treatment was started and twelve months after relapse. Mentality and development have been normal. Bornstein [4] treated a 4 year old boy who had miliary tuberculosis. Meningitis developed during convalescence; streptomycin was again administered, but death occurred within a month. Appelbaum's [5] patient was still living and apparently normal fourteen months after streptomycin therapy was started and eight months after therapy was completed. Vignec's [6] patient became deaf while under treatment and died after several months. Craig's [7] patient was treated for five months for miliary tuberculosis but contracted meningitis eighteen days after therapy was completed and died within two weeks. McDermott [8] treated 10 patients with meningitis; 7 died; only 1 is in good clinical remission. Hinshaw and Feldman [9] treated 12 patients who had meningitis; 4 survived; only 1 showed no residual neurologic signs. The Veterans Administration, the Army and the Navy [10] treated 91 patients with meningeal involvement; 33 are living. Only 18 of these are clinically well. In Debré's [11] series of 80 patients, 50 per cent died and not more than 5 per cent of the survivors were in good clinical remission.

M. I. Smith [12] treated infected albino rats with streptomycin and "promin" (sodium p,p-diaminodiphenylsulfone-N,N′-didextrose sulfonate) individually and in combination. He concluded that together these drugs exerted an action greater than might have been anticipated from a simple summation of effects. Cocchi [13] treated 28 patients having meningitis with streptomycin and "promin"; 7 died during treatment.

Because of our encouraging results with "promizole" in miliary tuberculosis, we decided to treat our patients having meningitis with both "promizole" and streptomycin, hoping to utilize the rapid action of streptomycin temporarily and then continue treatment with "promizole," since this sulfone can apparently be given safely and effectively over a period of years.

DOSAGE

"Promizole" was administered orally at six or twelve hour intervals so that the total daily dosage was 0.5 to 1.0 Gm. This daily dose was gradually increased until a blood level of 2 to 3 mg. per hundred cubic centimeters was obtained. As much as 5 Gm. daily has been given. A maintenance dose of 1 Gm. daily may be adequate after the first six months of treatment.

No attempt was made to give streptomycin on a weight basis. The dosage in older or larger children

From the Chest Clinic of the Children's Medical Service, Bellevue Hospital, and the Department of Pediatrics, New York University. Aided by grants from the National Tuberculosis Association and Parke, Davis & Company. "Promizole" was supplied by Parke, Davis & Company.

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was quickly increased to 2 Gm. intramuscularly daily in divided doses, usually at six hour intervals, although several patients were treated only twice daily. Infants and small children were given 0.5 to 1 Gm. intramuscularly daily. All patients received 0.1 Gm. of streptomycin intrathecally daily during at least the first week of treatment. We attempted to use streptomycin intrathecally for two months. After one or two weeks technical difficulties in performing daily punctures or toxic manifestations such as increased ataxia, nystagmus or transient strabismus may appear. Streptomycin was then given intrathecally only on alternate days, or the dosage of intrathecal streptomycin was reduced to 0.5 Gm. daily. In most cases, 0.1 Gm. intrathecally on alternate days was well tolerated and only minimal toxic signs occurred. After six weeks, if improvement continued, intrathecal therapy was given only every third or fourth day. In the course of two months from twenty-five to forty intrathecal doses were given, depending on the individual response to therapy. After two months of intrathecal therapy, a weekly, bimonthly or monthly spinal puncture was performed in order to judge the general course of the disease. This is important because of the frequency with which relapses have been reported.

Intramuscular administration of streptomycin was continued for a period of six months. At least 1 of our patients tolerated the initial dose for the entire period without interruption. More often the dosage had to be reduced or discontinued for a few days when severe toxic disturbances occurred. When reinstituted in gradually increasing doses, the maximum dose may be tolerated again without recurrence of the same toxic symptoms.

TOXIC MANIFESTATIONS

The toxic effects of "promizole" have been previously reported.[1] All our patients in this series showed some degree of thyroid enlargement within two to five months. Leukopenia did not occur. No effect on sexual maturation has so far been noted in these patients, nor have there been any other manifestations of "promizole" toxicity.

The most striking toxic effect of streptomycin occurred after intrathecal therapy. One to four hours after streptomycin is given intrathecally, increased ataxia, nystagmus, transient strabismus and vomiting may occur. We have seen it as early as the second day of treatment, but it is more commonly noted after three to four weeks. Some degree of ataxia was apparent in all our patients by the end of three to four weeks. Vomiting was frequent and required discontinuing the drug for several days in 1 of our patients to prevent undue nutritional disturbance. In several others, vomiting occurred daily after one meal, usually breakfast. If the interval between treatment and meals was increased, vomiting was less likely to occur. Three patients had generalized rashes during therapy with streptomycin. One rash was macular, and one erythematous followed by urticaria and associated with eosinophilia; a third child had a transient generalized papular rash during the first month of treatment but eosinophilia was not noted until three months later. These were the only cases in which eosinophilia was observed. One child had transient cylindruria associated with albuminuria during the third and fourth weeks, and the blood nonprotein nitrogen content rose to 53 mg. per hundred cubic centimeters during this period.

Deafness is the most dreaded toxic result of administration of streptomycin. None of our recovered patients are deaf by gross measurement, and this is true of 12 additional children treated with streptomycin for forms of tuberculosis other than meningitis. One patient became blind and deaf during the first month of tuberculous meningitis while being treated. It is impossible to state whether this was due to the disease or to the therapy, but he ultimately recovered from the meningitis with a complete restoration of vision and hearing.

COURSE OF MENINGITIS TREATED WITH STREPTOMYCIN AND "PROMIZOLE"

In preparation for the treatment of tuberculous meningitis by specific agents, a survey of our previous cases was recently undertaken in order to study the natural course of the disease.[14] In order to establish the success of any therapeutic agent, it is important first to be sure of the diagnosis of tuberculous meningitis and exclude the possibility of serous tuberculous meningitis, which has a less serious prognosis. It is also important to make the diagnosis of tuberculous meningitis as early as possible before irreversible neurologic damage has taken place.

Tuberculous meningitis in the first stage is more likely to be diagnosed early when the patient is already under supervision for tuberculosis. Meningitis may be suspected because of vomiting, drowsiness or irritability, but a definite diagnosis can only be made by examination of the spinal fluid. Even when streptomycin has been given early, the child usually passes to the second stage of meningitis and shows some of the neurologic responses associated with tuberculous meningitis, and the course may be similar to that of an untreated patient. The duration of the second stage under treatment may vary from several weeks to several months. The third, or comatose, stage of the disease may develop under treatment and yet be followed by complete recovery. Fever is usually slow to decline but may persist for several months. Loss of weight and weakness usually were pronounced, but the appetite in our cases remained good. On the whole, therapeutic response during the first month of treatment seemed slight. During the second month gain in weight, decline in temperature and an increase in well-being occurred. Toxic manifestations such as ataxia, periodic or severe vomiting, irritability and restlessness may be observed.

In our cases, neurologic signs cleared slowly. Diminished or even absent superficial and deep tendon reflexes may persist throughout the course of treatment and even into the convalescent period. Patient 2 still has a slight internal strabismus seven months after onset of meningitis. Patient 6 shows coarse tremor of both hands four months after diagnosis of meningitis. The sensorium was clouded during the height of the disease in all cases, and 1 patient (patient 5) was blind, deaf and apparently oblivious of his surroundings for over a month. However, none of the patients who recovered from tuberculous meningitis have any signs of mental impairment.

SPINAL FLUID CHANGES IN TREATED PATIENTS

The sugar content of the spinal fluid remained low during the first week or longer, then showed an irregular return to normal in three to twelve weeks. Proteins

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remained below 250 mg. per hundred cubic centimeters in 5 patients but were very high in 2: 6,200 mg. in patient 1, who died, and 2,100 mg. in patient 6 three weeks after the last intrathecal administration of streptomycin. The protein content of the spinal fluid returned to normal in 5 of our surviving patients within three to five months. Patient 6, five months after onset of meningitis, still has a protein content of over 400 mg. per hundred cubic centimeters. Cell counts were over 1,000 per cubic millimeter at some time in the course of intrathecal therapy in all patients, but had all returned to normal before the end of the fourth month of therapy.

REPORTS OF CASES

CASE 1.—E. S., a white girl aged 9 months, was admitted Dec. 21, 1946 with a history of fever, poor appetite and vomiting of two weeks' duration. Three days before admission, the child's neck became stiff. A roentgenogram of the chest disclosed right hilar enlargement and infiltration at the base of the right lung. Physical examination revealed a pale, flabby, moderately dehydrated, very unresponsive child. The temperature was 102.6 F. The anterior fontanel was bulging; pupils reacted sluggishly to light. Biot type breathing was present. There was pronounced nuchal rigidity and the superficial and deep reflexes were hyperactive.

The spinal fluid was clear with 90 cells per cubic millimeter and 76 mg. of protein and 46 mg. of sugar per hundred cubic centimeters. Tubercle bacilli were found on direct examination and culture. In a guinea pig inoculated with spinal fluid extensive tuberculosis developed.

On the second hospital day the child had a generalized convulsion and held the extremities rigidly. Superficial and deep reflexes were absent. Streptomycin and "promizole" were started on December 23 and continued until February 26. Intrathecal streptomycin was continued daily until January 27. Technical difficulties in performing lumbar punctures made it necessary to use the cisternal or ventricular routes thereafter.

For several weeks the child showed increased attentiveness, purposeful motions of the upper extremities and some interest in her surroundings. In early February her general condition became worse. Increased irritability, right internal strabismus and Cheyne-Stokes respiration were present. The temperature rose to 105 F. Death occurred on Feb. 26, 1947. No necropsy was obtained.

The patient received "promizole" orally 1.0 to 1.5 Gm. daily, and streptomycin, 0.6 Gm. intramuscularly daily for sixty-six days and 0.05 to 0.1 Gm. intrathecally for forty days, a total of 42 Gm. of streptomycin (38,000 units per pound [83,700 per kilogram] per diem).

CASE 2.—H. R., a Negro boy aged 11 years, was admitted Jan. 28, 1947. For one year he had noticed tenderness over the right forearm and limited motion of the right wrist. At another hospital, the reaction to the Mantoux test was positive to 0.01 mg. of old tuberculin. An abscess at the wrist was aspirated and guinea pigs inoculated with the fluid obtained died of extensive tuberculosis. Draining sinuses developed at the points of aspiration.

On admission to Bellevue Hospital, the patient appeared thin. There was tenderness over the upper dorsal vertebrae and dulness over the right lower part of the chest. Superficial and deep reflexes were active. Roentgenograms disclosed paravertebral infiltration involving the upper thoracic part of the spine, extensive destructive spondylitis involving the fifth, sixth and seventh thoracic vertebrae and a small area of rarefaction in the upper third of the shaft of the right ulna with surrounding osteoid density. The patient was placed on a Bradford frame.

During the first three weeks the temperature varied from 101 to 103 F.; it then declined to around 100 to 101 F. Roentgenograms of the chest taken in March revealed definite miliary infiltration, and "promizole" was started. About one week later the patient complained of headache and occasional vomiting. The temperature, which had been steadily rising for several weeks, reached 105 F. on April 5, and the patient then complained of photophobia, diplopia, increased vomiting and somnolence. Left external strabismus was first noted. The neurologic examination otherwise elicited no abnormality.

In the spinal fluid there were 240 cells per cubic millimeter, predominantly mononuclear, and 100 mg. of protein and 40 mg. of sugar per hundred cubic centimeters. Streptomycin therapy was begun the same day. Signs of meningeal irritation subsided, but an irregular septic type of fever continued until the course of intrathecal streptomycin was completed.

During the acute febrile stage of his illness, the patient lost 11 pounds (5 Kg.), but he has since regained and surpassed his admission weight. The temperature has remained normal the past two months. Serial roentgenograms of the chest showed complete clearance of the miliary tuberculosis two months after antibiotic therapy was started and maximum regression of the paravertebral abscess within three months. The sinus tracts of the right forearm ceased draining after six weeks. The dorsal vertebrae showed no change and the patient was placed in a plaster of paris cast. The thyroid isthmus was palpable, and a mild degree of left external strabismus is still present but does not interfere with vision.

The patient received "promizole" orally, 1 to 5 Gm. daily, and streptomycin, 1.5 Gm. intramuscularly daily, for one hundred and eighty-three days and 0.1 Gm. intrathecally in twenty-four lumbar punctures over a period of fifty-four days, a total of 276.0 Gm. of streptomycin (31,000 units per pound [68,280 per kilogram] per diem).

CASE 3.—J. Y. was a white boy aged 4 years. In March 1947 he had a sore throat with headache and a temperature as high as 105 F., which declined to normal in ten days. Two weeks later he had a recurrence of these symptoms, with nose bleeds and pains in the knees; he was admitted to Bellevue Hospital on April 16, 1947 with a diagnosis of rheumatic fever.

Physical examination revealed a well nourished, very pale, mentally alert but acutely ill child. The only abnormalities noted were palpable cervical lymph nodes, slightly injected hypertrophied tonsils and that the liver was palpable 1 cm. below the costal margin. The reaction to the Mantoux test was strongly positive, and a roentgenogram of the chest disclosed miliary tuberculosis. Administration of streptomycin and "promizole" was instituted on April 24. Miliary tubercles were seen in the fundi; tubercle bacilli were found in the blood culture.

After one month the miliary lesions of the lungs appeared definitely decreased in size and number, and two weeks later there was no further roentgen evidence of miliary infiltrations.

By the end of the second month, the temperature had again become elevated. All specific therapy was discontinued for sixteen days, during which time other causes of fever were investigated. The spinal fluid cell count and chemical studies revealed normal values. The temperature remained high and streptomycin was again started. Seven days later the patient complained of headache, photophobia and vomiting. There was pronounced nuchal rigidity associated with a positive Kernig sign, bilateral ankle clonus and absent abdominal reflexes. The spinal fluid was cloudy with 413 cells per cubic millimeter and 124 mg. of protein and 30 mg. of sugar per hundred cubic centimeters. Tubercle bacilli were found by direct examination and on culture of the spinal fluid. "Promizole" and intrathecal streptomycin were instituted.

During the course of combined intramuscular and intrathecal therapy, the acute symptoms subsided rapidly and variable responses were obtained on subsequent neurologic examinations. Occasional vomiting occurred after the course of intrathecal therapy was completed but subsided when the intramuscular dose was reduced. The subsequent course has been afebrile and uneventful. Physical and neurologic examination revealed no abnormality except for a mild ataxia which does not interfere with normal activity and play.

The patient received "promizole" orally, 1 and 1.5 Gm. daily, and streptomycin, 1 to 2 Gm. intramuscularly, for one hundred and seventy-five days; streptomycin, 0.1 Gm., was given intra-

thecally in thirty-six lumbar punctures during a period of sixty-six days. A total of 229 Gm. of streptomycin was given (55,000 units per pound [121,150 per kilogram] per diem).[15]

CASE 4.—L. W., a 3 year old Negro boy, admitted May 3, 1947. A diagnosis of primary tuberculosis was made in January 1947, and under home care the child continued to have fever, easy fatigue, loss of weight and poor appetite. In April he complained of headache and abdominal pain. The symptoms persisted and the patient was hospitalized.

Physical examination revealed a well developed and nourished alert child weighing 32 pounds (13.6 Kg.). The temperature was 103 F., and except for the shotty cervical lymph nodes the general examination revealed no other abnormalities.

On the third hospital day he became irritable and apathetic. The neck was decidedly stiff and bilateral ankle clonus was present. The spinal fluid was cloudy with 188 cells, predominantly lymphocytes, per cubic millimeter and 66 mg. of protein and 23 mg. of sugar per hundred cubic centimeters. A guinea pig inoculated with spinal fluid died of extensive tuberculosis.

Streptomycin and "promizole" were started, and during the next few weeks variable neurologic signs were present. On the twenty-first day of treatment the child had a generalized convulsion. On the twenty-ninth day increased ataxia, nystagmus and facial edema were noted. The liver was palpable 4 cm. below the costal margin. Streptomycin was reduced to 1 Gm. intramuscularly daily.

During the third month excellent clinical improvement was apparent, the neurologic examination was normal, the child gained weight and remained cheerful and playful. The thyroid gland had become definitely palpable. Small doses of desiccated thyroid extract were given, and physical and mental improvement were apparent within a few weeks.

The last three months of treatment were uneventful, and except for a mild degree of ataxia there was no evidence of impairment.

The patient received "promizole," 0.5 to 1 Gm. daily, and streptomycin, 1.5 Gm. intramuscularly daily, which was reduced to 1 Gm. daily during the fifth week. Streptomycin, 0.1 Gm. intrathecally, was given thirty-five times during a period of fifty-six days. A total of 207 Gm. of streptomycin was given in one hundred and ninety days (47,000 units per pound [103.520 per kilogram] per diem).

CASE 5.—E. D., a Negro boy aged 2, was admitted May 19, 1947 with a history of fever, swelling of the cervical lymph nodes, cough, nasal discharge and pronounced loss of weight and appetite of three weeks' duration.

Physical examination revealed an emaciated chronically ill child. The temperature was 103.4 F. The reaction to the patch test was positive, and a roentgenogram of the chest disclosed widening of the mediastinum and enlarged left hilar nodes.

On the sixth day, somnolence, nuchal rigidity and hyperactive reflexes were associated with positive Kernig and Brudzinski signs. The spinal fluid was clear with 15 cells per cubic millimeter and 275 mg. of protein and 15 mg. of sugar per hundred cubic centimeters. Acid-fast bacilli were found in the pellicle. Streptomycin and "promizole" were started the same day. The child could be roused to take food and fluids and cried on attempts to move extremities passively. During the third and fourth weeks of his disease, the child became blind and hearing was apparently completely lost. Transient cylindruria and albuminuria appeared and the blood nonprotein nitrogen rose to 53 mg. per hundred cubic centimeters.

During the second month a vegetative, somewhat decerebrate existence continued. The usual course of intrathecal streptomycin was completed. By the fourth month, vision and hearing were restored. The child held his cup and showed evidence of gain in weight and strength. He now stands up in bed, feeds himself, plays with his toys and talks and laughs heartily at games in which the other children engage. Neurologic examination revealed no abnormalities.

The patient received 1 Gm. of streptomycin intramuscularly daily for two weeks, when the dosage was decreased to 0.5 Gm. In one hundred and eighty-five days 101.6 Gm. of streptomycin was given intramuscularly. The drug was given intrathecally thirty-four times in fifty-eight days. Total combined streptomycin was 105 Gm. (25,000 units per pound [55,070 per kilogram] per diem).

CASE 6.—S. E., a Negro girl aged 7, was admitted July 7, 1947. For one week she had complained of headache and sleepiness, during which time she became more irritable and feverish and vomited everything that she ate.

Physical examination revealed a lethargic, chronically ill child weighing 31 pounds (14.1 Kg.). There was stiffness of the back and pain on motion of the extremities. Nuchal rigidity was associated with hyperactive reflexes and positive Kernig's and Brudzinski's signs. The reaction to the patch test was positive, and a roentgenogram of the chest disclosed large hilar and mediastinal nodes.

The initial lumbar puncture showed 99 cells, predominantly lymphocytes, per cubic millimeter and 158 mg. of protein and 35 mg. of sugar per hundred cubic centimeters. Streptomycin and "promizole" were started on July 8. Acid-fast bacilli were found in the spinal fluid on the eleventh, twelfth and fourteenth days after therapy was begun. The patient showed slow but steady improvement during the first three weeks, remained conscious at all times and sat up for brief intervals to play with toys.

During the fourth week, increased drowsiness and stiff neck recurred, associated with coarse tremors of the hands. Photophobia, nystagmus and fleeting pathologic reflexes were present from time to time during the next three weeks, suggestive of encephalitis. Cisternal punctures were performed for several days but there was no evidence of block. The patient became disoriented, and streptomycin was discontinued for three days because of severe vomiting.

Streptomycin was reordered with a maximum dose of 1 Gm. intramuscularly daily. This was well tolerated for four weeks with evidence of improvement, when vomiting recurred associated with listlessness and difficulty in speech and swallowing. All treatment was then discontinued. The child at present is weak and still has transient coarse tremor of the upper extremities. Neurologic examination is otherwise negative. She is clear mentally, able to feed herself, draw pictures and play with toys. Although she tires easily, she acts like a child convalescent from a severe illness.

The patient was given promizole," 1 to 2 Gm. daily, and streptomycin, 1 to 2 Gm. intramuscularly daily. Intrathecal therapy consisted of thirty-seven lumbar and three cisternal punctures over a fifty-eight day period. Total combined streptomycin was 132 Gm. in ninety-six days (58,000 units per pound [127,750 per kilogram] per diem).

CASE 7.—O. V., a boy aged 23 months, was referred to the hospital on July 28, 1947 with a diagnosis of primary tuberculosis. Physical examination revealed a healthy well nourished afebrile child weighing 33 pounds (14,969 Gm.). There was dulness in the right side of the chest anteriorly below the fourth rib level. The liver edge and spleen were palpable. A roentgenogram of the chest disclosed widening of the mediastinum to the right and mottling in the lower third of the right lung.

Fever (102 to 103 F.) first appeared during the third week. On the twenty-sixth hospital day, irritability, somnolence, muscle twitching and nuchal rigidity were noted. Hyperactive reflexes and unsustained ankle clonus were present. The spinal fluid was cloudy with 378 cells, predominantly lymphocytes, per cubic millimeter and 124 mg. of protein and 32 mg. of sugar per hundred cubic centimeters. Streptomycin and "promizole" were started on August 22.

Two days later the child was again active and playful and sat up in his crib. Neurologic examinations showed variable responses from day to day. Clinical improvement has been

15. On Nov. 19, 1947 routine examination of the spinal fluid of this patient showed a sugar content of 25 mg. per hundred cubic centimeters and a protein content of 52 mg. per hundred cubic centimeters; culture of this fluid was positive for tubercle bacilli. The patient showed no clinical evidence of meningitis. He has been retreated with streptomycin, and subsequent spinal fluid cultures have shown no growth.

evident throughout most of the course of treatment. The child now weighs 40 pounds (18,144 Gm.), talks clearly, plays vigorously and remains healthy and active. Ataxia is apparent only when blindfolded. Three months of intramuscular administration of streptomycin have been completed (1 Gm. daily); it will be continued for the full six month period. Thirty-seven therapeutic lumbar punctures were performed in fifty-seven days. When treatment is completed, 186 Gm. of streptomycin will have been given by combined therapy (40,000 units per pound [88,110 per kilogram] per diem).

COMMENT

Streptomycin has revolutionized our attitude toward tuberculous meningitis. Before this antibiotic was introduced, the outlook was hopeless. This serious prognosis has been modified by the use of streptomycin; some patients have apparently been cured. But it is obvious from the literature that in some cases arrested by streptomycin, relapse and death have occurred; and some patients who survived have extensive residual neurologic damage.

We decided to attempt the treatment of tuberculous meningitis by combining "promizole" and streptomycin in order to avail ourselves of the peculiar advantages each possesses. "Promizole" can be given orally and for a period of years with apparently no serious toxic results. It seems to have an inhibitory action on hematogenous tuberculosis, but clinical evidence of its action is usually delayed until at least six weeks after the drug is first given. Streptomycin acts more quickly but cannot be given orally and is more toxic; there is also evidence that tubercle bacilli may develop resistance to it. Moreover, M. I. Smith has shown in guinea pigs that the use of a sulfone and streptomycin together enhances their action beyond the expected value of either alone.

SUMMARY AND CONCLUSIONS

Seven patients with tuberculous meningitis were treated with streptomycin and "promizole." The first patient died after two months of treatment. Six patients are living three to eight months after treatment was instituted. They are all normal mentally and have no neurologic sequelae except for a mild degree of strabismus in case 2 and transient coarse tremors of the upper extremities in case 6.

Six patients had roentgen evidence of active primary tuberculosis and 2 of these had pulmonary miliary tuberculosis. In 5 patients meningitis developed under observation, in 1 after two months of combined treatment for miliary tuberculosis.

Tubercle bacilli were found in the spinal fluid of 5 patients. In another patient bacilli were obtained by guinea pig inoculation from an accompanying bone lesion but were not demonstrated in the spinal fluid.

No serious toxic effects of "promizole" were noted. All cases showed enlarged thyroid two to five months after treatment was begun. The only constant toxic reaction to streptomycin was ataxia which developed in the third or fourth week after institution of therapy. There is no evidence of auditory impairment in any of our patients.

Our patients have not been under observation long enough to report as cured but we have 6 patients with tuberculous meningitis out of 7 treated patients who have no pronounced neurologic damage and are normal mentally. We are making a preliminary report at this time hoping that other cases will be published in order to increase our knowledge of the treatment of tuberculous meningitis.

INTRATHECAL THERAPY NOT REQUIRED FOR H. INFLUENZAE MENINGITIS

A Report of 28 Cases

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Since 1939, when Alexander [1] developed specific type B anti-influenzal rabbit serum, interest in influenzal meningitis has been greatly intensified. Many reports of recoveries have been published during the past five years, and much has been written concerning this disease, which was formerly almost universally fatal.[2] Nevertheless, although sulfonamide compounds, specific serum and streptomycin are all valuable therapeutic aids, there is no standard accepted for their application. Those who make use of intrathecal treatment cling tenaciously to the method as an old established custom which cannot be relinquished. However, more than twelve years ago one [3] of us reported on the exclusive use of intravenous therapy for patients with meningitis and demonstrated its advantages, including lowered fatality rates,[4] when large doses of serum were injected and intrathecal therapy was abandoned. Although when first inaugurated this plan applied to meningococcic infections, it was soon found equally effective for all [5] forms of meningitis regardless of the causative organism. But intrathecal treatment has by no means been relegated to the past by most physicians. And many with extensive experience still believe that numerous spinal taps for drainage are necessary in purulent meningitis. Silverthorne and Cameron [6] advised daily lumbar punctures with drainage until at least three successive specimens of spinal fluid are sterile. They referred to meningococcic meningitis. But we are convinced that one [7] spinal tap for diagnosis is sufficient as a rule for any kind of meningitis.

Smith and co-workers [8] reported 28 cases of influenzal meningitis with only 2 deaths, and it is noteworthy that 25 of the 27 patients treated with serum received all or most of it intravenously. Moreover, 1 patient whose spinal fluid cultures remained positive was given serum intrathecally without apparent beneficial effect. These authors expressed the belief that patients with influenzal meningitis should be tapped daily until the spinal fluid cultures have been negative for several days and until the spinal fluid sugar has returned to normal. Such procedures are of scientific interest, as they were during earlier years in the treatment of meningococcic meningitis, but they are not necessary to bring about recovery. Strangely enough,

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3. (a) Hoyne, A. L.: Meningococcic Meningitis: Importance of Intravenous Therapy, Illinois M. J. **68**: 307 (Oct.) 1935; (b) Treatment of Meningococcic Meningitis Without Intraspinal Therapy, Nebraska M. J. **21**: 321 (Sept.) 1936.
4. Hoyne, A. L.: Meningitis, J. Iowa M. Soc. **26**: 549 (Oct.) 1936.
5. Hoyne, A. L.: Improved Methods in Treatment of Meningitis, Mississippi Valley M. J. **66**: 7 (Jan.) 1944.
6. Silverthorne, N., and Cameron, C.: Studies in Meningococcic Infection, J. Pediat. **19**: 618 (Nov.) 1941.
7. Hoyne, A. L.: Epidemic Meningitis, J. A. M. A. **115**: 1852 (Nov. 30) 1940.
8. Smith, M. H. D.; Wilson, P. E., and Hodes, H. L.: Influenzal Meningitis, J. A. M. A. **130**: 331 (Feb. 9) 1946.

the same authors seemed surprised at the results of their treatment without intrathecal therapy, for they stated, "owing either to chance or to the use of large doses of serum (the patients) seem to recover without intrathecal serum."

Type B anti-influenzal serum has been given intrathecally by many investigators, some of whom reported shock,[9] anaphylactic reactions, hydrocephalus and other complications[10] which were so common during the early days of serum therapy for meningococcic meningitis. In addition, it is sometimes said that even though specific type B anti-influenzal rabbit serum is injected intraspinally[11] every twenty-four hours, or more often, for a period of several days, still positive cultures for Hemophilus influenzae have been obtained from the spinal fluid. Such an occurrence parallels exactly our experience with meningococcic meningitis when intrathecal treatment was routine. Moreover, it seems to us that there is no doubt but that intrathecal treatment prolongs the time required for recovery, and one of us has called attention to that fact.[12]

Edmonds and Neter[11] have expressed the opinion that the matter of intrathecal therapy is still a moot question. Nevertheless, they enumerated many of the ill effects of intrathecal treatment, and most of their recovered patients had serum solely by the intravenous route. They cited 4 cases in which serum was given intraspinally and intracisternally at a time when many micro-organisms were present in the cerebrospinal fluid, a circumstance which these authors intimated was responsible for fatal terminations in all 4 patients. Various difficulties were also encountered with other patients, who received intraspinal therapy. If intrathecal administration of serum is not of value when there are many organisms in the spinal fluid, why then, if given in this manner, should it be beneficial at any stage of the disease? Since 1934[8b] we have treated without any intrathecal therapy several thousand patients with meningitis of various kinds and the results were remarkably successful. Included among them one[13] of us reported 16 recoveries from influenzal meningitis; of the 16 patients only 3 received intrathecal treatment.

Reporting on the use of specific antiserum intrathecally and intravenously for influenzal meningitis, Blumberg, Tannenbaum and Gleich[14] stated that the mortality rate was reduced only to 72 per cent. In their own series of 11 patients "only 6 died." In two thirds of their fatal cases intrathecal treatment was employed; in more than half of their recoveries it was not.

Although Alexander and co-workers[15] conceded that the time required to sterilize the spinal fluid is quite comparable whether serum is given intravenously exclusively or both intravenously and intraspinally, still they advised intrathecal administration of serum if after a period of several days evidence of satisfactory progress is lacking. Thus they displayed a lack of confidence in exclusive intravenous therapy. But they reported 33 instances in which both routes were followed and the fatality rate was 36.3 per cent, whereas for 17 with intravenous therapy only the fatality was 5.8 per cent.

The National Research Council advised when releasing streptomycin for the treatment of influenzal meningitis that this new antibiotic be injected intrathecally. And Nussbaum, Goodman, Robinson and Ray[16] advocated giving streptomycin intrathecally "in view of the failure of adequate amounts of this new drug to enter the spinal fluid when injected intravenously or intramuscularly."

We believe that intrathecal therapy is totally unnecessary, and it is largely for that reason that we are reporting the 28 cases of influenzal meningitis which are represented in the accompanying table. Our series consists of 16 consecutive cases at Municipal Contagious Disease Hospital and 12 consecutive cases at Cook County Contagious Hospital. One or both of us were in constant attendance on the entire group. There were 2 deaths. The single fatality at Municipal Contagious Disease Hospital occurred in a Negro girl who when admitted with whooping cough was 7 weeks of age. This was an emaciated child who had severe paroxysms of pertussis. After four weeks in the hospital a fever and bulging of the anterior fontanel developed. On that account an intraventricular puncture was made and a milky cerebrospinal fluid was released in which the cell count was 13,000 per cubic millimeter, mostly polymorphonuclear cells. Smear and culture of the spinal fluid revealed type B H. influenzae. After two intraventricular injections of 50,000 micrograms of streptomycin at twenty-four hour intervals, the laboratory reported both smear and culture of the spinal fluid as negative. The total number of intraventricular injections was eight, and intramuscular treatment with streptomycin in doses of 100,000 micrograms every three hours was continued for thirty days. Nevertheless, hydrocephalus developed and the infant died sixty days after the diagnosis of influenzal meningitis was established. The other death occurred at Cook County Contagious Hospital. The patient was a white boy, 12 months old, who entered the hospital with a temperature of 105.2 F. and whose condition was desperate at that time. Examination of the spinal fluid disclosed 1,770 cells per cubic millimeter, nearly all polymorphonuclear; both smear and culture of the spinal fluid were positive for H. influenzae. He received 50,000 micrograms of streptomycin intrathecally and 600,000 micrograms intramuscularly, but death ensued within thirteen hours of admission to the hospital.

All our patients in Municipal Contagious Disease Hospital were treated during the period from June 1946 to January 1947, inclusive; the Cook County Contagious Hospital group constituted all the patients with influenzal meningitis who were admitted during 1946. As may be seen in the table, 5 patients were less than 1 year of age. Twenty were boys and 8 girls.

9. Josephi, M.; Mehlman, M. D., and Hagar, D.: Influenzal Meningitis in a Seven Month Old Infant, J. Pediat. **19:** 823 (Dec.) 1941.
10. Birmingham, J. R.; Kaye, R., and Smith, M. H. D.: Streptomycin in the Treatment of Influenzal Meningitis, J. Pediat. **29:** 1 (July) 1946.
11. Edmonds, A. M., and Neter, E.: Appraisal of Treatment of Hemophilus Influenzae Type B Meningitis with Specific Rabbit Serum and Sulfonamides, J. Pediat. **28:** 462 (April) 1946.
12. Hoyne, A. L.: Intravenous Treatment of Meningococcic Meningitis with Meningococcic Antitoxin, J. A. M. A. **107:** 478 (Aug. 15) 1936.
13. Hoyne, A. L.: Advances in Treatment of Meningitis, J. Pediat. **19:** 778 (Dec.) 1941.
14. Blumberg, M. L.; Tannenbaum, E., and Gleich, M.: Advances in the Chemotherapy of Influenzal Meningitis, J. Pediat. **24:** 182 (Feb.) 1944.
15. Alexander, H. E.; Ellis, C., and Leidy, G.: Treatment of Type-Specific Hemophilus Influenzae Infections in Infancy and Childhood, J. Pediat. **20:** 673 (June) 1942.
16. Nussbaum, S.; Goodman, S.; Robinson, C., and Ray, L.: Influenzal Meningitis: Report of Three Cases Treated with Streptomycin and Sulfadiazine, J. Pediat. **29:** 14 (July) 1946.

There were 4 Negroes. Only 3 [17] of the recovered patients at Municipal Contagious Disease Hospital received streptomycin intrathecally. This route was adopted on the recommendation of the National Research Council, which provided the remedy for these particular patients. In the County Hospital group 3 patients also received streptomycin intraspinally, and this number included the single fatality. Of the entire 28 patients, 18 were treated with streptomycin. Among these 18 there were 7 who received the antibiotic intraspinally; the remaining 11 were treated entirely by the intramuscular route. Only one relapse was encountered, and this occurred in the County Hospital group; the patient received type B antiinfluenzal serum but no streptomycin. Every patient was given a sulfonamide drug irrespective of any other treatment.

Among the complications observed was hydrocephalus in the infant with whooping cough who died. Another patient had a left hemiplegia. He was seen several months after his release from the hospital and the condition seemed to be undergoing progressive improvement. An infant had paralysis of the left side of the face which cleared up. In addition 2 patients each had weakness of the left arm. It is interesting to note that in all 4 cases the paresis or paralysis occurred on the left side of the body. There was a single example of deafness which seemed to be complete. The child concerned, 2½ years of age, was treated with streptomycin for nine days, and whether the drug played any part in this complication is extremely doubtful.

Several of the patients were of special interest. The 7 week old baby (case 1) with whooping cough has been referred to. Another Negro infant, 7 months old (case 2) and also convalescing from whooping cough for which we had treated her, returned to the hospital forty-two days after release. Examination revealed the presence of fever and a tense fontanel. A lumbar puncture was made and a cell count of the spinal fluid found to be 11,000 per cubic millimeter; smear and culture revealed type B H. influenzae. This child was treated with streptomycin intramuscularly and recovered.

Patient 13 was admitted with influenzal meningitis approximately two months after his brother had been released from Municipal Contagious Disease Hospital after treatment for laryngotracheobronchitis which had required a tracheotomy. It was not determined whether there was any relationship between the infections in these siblings.

Patient 14 was sent to Municipal Contagious Disease Hospital for intubation because laryngeal diphtheria was suspected. The boy's temperature was 106 F., he was pale, lips cyanotic, and there were decided

Twenty-Eight Cases of Influenzal Meningitis

Case No.	Age	Blood Culture	No. of Lumbar Punctures	Spinal Fluid: Cell Count	Spinal Fluid: Culture	Spinal Fluid: Sugar	Drug	Serum, Mg., All Intravenous	Streptomycin	Complications	Days in Hospital	Result
Municipal Contagious Disease Hospital												
1	7 wk.	None	1 1 Cist. 9 Vent.	13,000	Positive	..	D*	50	I. S.† I. M.‡	Hydrocephalus	60	Died
2	7 mo.	None	1	11,200	Positive	..	D	...	I. M.	None	41	Recovered
3	9 mo.	None	3	650	Positive	60	D	...	I. M.	None	28	Recovered
4	10 mo.	Positive	1	1,750	Positive	27	D	...	I. M.	None	24	Recovered
5	13 mo.	Positive	3	3,000	Positive	50	D	100	I. S. I. M.	None	23	Recovered
6	18 mo.	Negative	1	2,160	Positive	51	D	...	I. M.	None	21	Recovered
7	22 mo.	Positive	1	720	Positive	35	D	150	None	None	24	Recovered
8	2 yr.	None	1	1,440	Positive	34	D	...	I. M.	None	20	Recovered
9	2½ yr.	Negative	2	3,200	Positive	29	D	...	I. M.	Deafness	32	Recovered
10	3 yr.	Positive	1	8,640	Positive	45	D	...	None	None	20	Recovered
11	3 yr.	Positive	1	950	Positive	53	D	100	None	None	14	Recovered
12	3 yr.	Negative	5	1,800	Positive	21	D	150	I. M. I. S.	Left hemiplegia	46	Recovered
13	3 yr.	Positive	1	12,000	Positive	45	D	...	I. M.	Left facial paralysis	15	Recovered
14	5 yr.	Positive	1	5,760	Negative	76	D	...	I. M.	None	16	Recovered
15	5 yr.	Positive	1	1,800	Positive	20	D	...	None	None	16	Recovered
16	9½ yr.	Positive	4	5,000	Positive	18	P§	100	I. S. I. M.	None	21	Recovered
Cook County Contagious Disease Hospital												
17	6 mo.	Positive	3	4,320	Positive	11	D	...	None	Weakness, left arm	35	Recovered
18	12 mo.	Positive	2	1,770	Positive	16	D	...	I. S. I. M.	None	13 hr.	Died
19	18 mo.	Negative	9	662	Positive	18	D	...	I. S. I. M.	None	45	Recovered
20	22 mo.	Positive	3	2,980	Positive	20	D	...	None	None	31	Recovered
21	2 yr.	Negative	1	35,000	Positive	18	D	...	I. M.	None	30	Recovered
22	2½ yr.	Negative	3	6,000	Positive	13	D	...	None	None	24	Recovered
23	2½ yr.	None	1	2,100	Positive	59	D	50	None	None	20	Recovered
24	3 yr.	Positive	4	1,000	Positive	16	D	125	I. S. I. M.	Weakness, left arm	29	Recovered
25	3 yr.	Positive	1	46,000	Positive	16	D	50	I. M.	None	24	Recovered
26	5 yr.	Positive	1	720	Positive	50	D	125	None	None	15	Recovered
27	6 yr.	Positive	1	11,000	Positive	10	D	250	None	None	37	Recovered
28	6 yr.	Positive	0#	.....	.....	..	Th‖	...	I. M.	None	19	Recovered

* D: sulfadiazine. † I. S.: intrathecal. ‡ I. M.: intramuscular. § P: sulfapyridine. # Puncture before admission. ‖ Th: sulfathiazole.

17. Hoyne, A. L.; Brown, R. H., and Drucker, A. P.: Influenzal Meningitis Treated with Streptomycin: Report of Three Cases with Recovery, Arch. Pediat. **63**: 559 (Nov.) 1946.

retractions of abdominal, intercostal and supraclavicular areas with each inspiratory effort. On palpation he was found to have pronounced edema about the glottis, and it was apparent that an intubation would not suffice. There was not sufficient time for laryngoscopic inspection. His condition was critical, and we performed a tracheotomy at once, which afforded immediate relief. Blood was obtained for culture, for on the basis of past experience we surmised that he might be suffering from H. influenzae bacteremia. There was no stiffness of the neck, nor were there any neurologic signs to suggest the possibility of meningitis. Nevertheless, on the following day, although his temperature had fallen to 101 F. and his general condition appeared excellent, he was placed on streptomycin therapy before the report of the blood culture had been received. Twenty-four hours later there was a sharp rise in temperature, nuchal rigidity was present, and a lumbar puncture was made. The cell count of the spinal fluid was 5,760 polymorphonuclear cells per cubic millimeter. In the meantime the blood culture was reported positive for H. influenzae, and the smear and culture of the spinal fluid also proved to be positive. He made an excellent recovery.

Another interesting case was case 19. This patient was a girl aged 18 months who was sent to the County Contagious Hospital as probably having poliomyelitis. She had a temperature of 103.6 F. on admission, with a history of nine days of illness. There was no paralysis and scarcely more than a suspicion of nuchal rigidity. A lumbar puncture revealed 662 cells, nearly all lymphocytes, in the spinal fluid. The Pandy test was positive, and smear and culture of the spinal fluid were reported negative, as was also a blood culture. She continued to have pyrexia and became more and more irritable. Three days after admission a second spinal tap was made and the cell count was 666, and still mostly lymphocytes. At this time the spinal fluid sugar was 24 mg. per hundred cubic centimeters, in contrast to the original report of 18 mg. She had been receiving sulfadiazine because of possible pneumonia. Again smear and culture of the spinal fluid were reported negative. The child was not making good progress and fever continued, as well as an increasing degree of irritability. Therefore a third lumbar puncture was made; this was October 8, six days after her admission. On this third occasion there were many polymorphonuclear cells, but although no organisms were found on smear the spinal fluid culture was positive for H. influenzae. The child was treated with streptomycin on five occasions intrathecally in addition to intramuscular injections. The streptomycin given intrathecally was in four doses of 50,000 micrograms and one dose of 100,000 micrograms. The intramuscular injections consisted of 150,000 micrograms every three hours for twenty-seven days. The total period of hospitalization was forty-five days, and at the end of that time her recovery appeared to be complete without any complications. We believe that her progress would have been more rapid without intrathecal treatment.

In nearly all our cases the dosage of streptomycin intramuscularly consisted of 100,000 micrograms every three hours. The average number of days of streptomycin treatment was 5.9 at Municipal Contagious Disease Hospital, and at County Contagious Hospital 17.2. The latter figure, however, is misleading because 1 patient (no. 19) in whom a late diagnosis was made was treated for twenty-seven days before recovery. The average total dose for recovered patients at Municipal Hospital was 4.6 Gm., whereas the average at the County Hospital was 20.9 Gm. The latter figure is undoubtedly excessive. All but 2 of the patients received sulfadiazine; 1 had sulfapyridine, and 1 sulfathiazole. In nearly every case the initial dose of the sulfonamide compound was given intravenously. For the purpose of forestalling the possibility of a relapse the sulfonamide compound was not discontinued as a rule in less than three weeks from the beginning of treatment.

Although specific type anti-influenzal serum was given to 11 patients it is our opinion that this form of therapy is not necessary when the dosage of streptomycin and the sulfonamide drug is adequate. In fact, it seems probable that satisfactory recoveries may often be brought about by the intramuscular injection of streptomycin alone, just as may occur when patients are treated exclusively with sulfonamide drugs (cases 10, 15, 17, 20 and 22). Alexander, Leidy, Rake and Donovick [18] have reported 12 recoveries in which treatment was exclusively with streptomycin. However, in every one of these instances they gave streptomycin intrathecally as well as intramuscularly. We placed a high value on Alexander's serum prior to the availability of streptomycin, but always gave it intravenously and never injected anti-influenzal serum intrathecally. Alexander and co-workers,[18] in discussing the use of specific type anti-influenzal serum, commented on the fact that although the specific serum was injected intrathecally for several days positive cultures for the infecting organisms were still secured from the spinal fluid. Their statement is reminiscent of the days of intrathecal therapy for meningococcic meningitis. Considering the many disadvantages of serum therapy, not forgetting cost as well as the possibility of serum reactions, we believe that finally serum for influenzal meningitis will seldom be used when streptomycin is available.

SUMMARY

Twenty-eight consecutive cases of influenzal meningitis with 2 deaths, or a fatality of 7 per cent, are reported. The patient who died soon after hospitalization being excluded, the corrected fatality rate is 3.7 per cent for 27 patients.

Sixteen of the patients were at Municipal Contagious Disease Hospital and 12 at Cook County Contagious Disease Hospital. There was a single fatality in each group. One death occurred in a 7 week old infant who was also suffering from whooping cough and developed hydrocephalus. The other was a year old infant admitted to County Hospital in a moribund condition, who died within thirteen hours.

Eighteen of the 28 patients were treated with streptomycin. Twelve patients received streptomycin but no serum. Eleven patients were given streptomycin intramuscularly but had no intrathecal treatment; 10 of these had no serum therapy. Seven were given streptomycin intrathecally as well as intramuscularly, and among these occurred the two deaths. Five patients received serum but no streptomycin.

18. Alexander, H. E.; Leidy, G.; Rake, G., and Donovick, R.: Meningitis Due to Hemophilus Influenzae, J. A. M. A. **132**: 434 (Oct. 26) 1946.

Six patients were treated with serum, streptomycin and a sulfonamide compound. Five patients were treated with a sulfonamide compound exclusively; the drug for all 5 of these was sulfadiazine, although in 2 instances the initial dose was sulfathiazole.

Fifteen of the patients each had only one lumbar puncture. One patient had no spinal tap. The average number of lumbar punctures for the recovered patients was 2.0.

Seventeen (85 per cent) of 20 patients had positive blood cultures. All patients with the exception of the one who had no spinal puncture had positive smears or cultures from the spinal fluid. In all 28 patients the organism was shown to be type B Hemophilus influenzae.

Every patient was given a sulfonamide compound. Sulfadiazine was used in 21 instances; sulfadiazine and sulfathiazole in 5, and in the 2 other cases sulfathiazole and sulfapyridine were used singly. None of the patients had any petechiae. There was only one relapse, which occurred in a serum-treated patient. The complications included deafness in 1 patient, hydrocephalus in 1, left hemiplegia in 1, left facial paralysis in 1, paresis of the left arm in 2 and serum sickness in 4.

CONCLUSION

In our series of 28 patients, 21 of the 26 who recovered received no intrathecal therapy. These results should be regarded as additional evidence that intraspinal treatment is not a necessity for the successful management of influenzal meningitis.

On the basis of a dozen years of experience in the treatment of meningitis without intrathecal therapy, it seems certain that recovery is more prompt and complications are fewer when intrathecal treatment is omitted. It may be repeated that the primary purpose for a lumbar puncture should be to establish a diagnosis. Frequent intrathecal taps are of no benefit to the patient. We believe that intrathecal therapy is contraindicated for Type B H. influenzae meningitis.

NOTE: Since completion of this paper 2 additional patients were admitted to Cook County Contagious Hospital in 1947, and both recovered. This makes 14 consecutive patients with influenzal meningitis at County hospital and 16 at Municipal hospital with 1 death in each group, or a fatality rate of 6.6 per cent for 30 patients.

3026 South California Avenue.

Nothing More Dramatic in Medicine.—Liver and liver extracts affect the stroma of erythrocytes only. This verified Whipple's idea expressed in 1922 that there is a scarcity of stroma-building material in pernicious anemia. With adequate liver therapy the blood of a patient about to die rapidly responds and returns completely to normal. The glossitis and other gastrointestinal symptoms disappear entirely. The neurologic symptoms become improved or do not progress; at times they disappear entirely. There is nothing more dramatic in medicine than the effect of liver therapy on a patient with pernicious anemia. Only the use of sulfa drugs and other antibiotics such as penicillin afford such brilliant results. It was found that a liver extract acted just as well as whole liver. Extracts have been improved until now these are almost perfect in their action. A monthly injection of a potent extract will keep the blood normal and prevent the development of a neurologic lesion. An extract of normal gastric mucosa has a similar action, as one would expect from Castle's discovery.—Haden, Russell L., M.D., Pernicious Anemia from Addison to Folic Acid, *Blood, The Journal of Hematology*, page 22, January 1948.

PRACTICAL ASPECTS OF ALLERGIC RHINITIS

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Every physician is familiar with the plight of the patient who seeks help because of recurring perennial nasal obstruction, accompanied with profuse thin watery nasal secretion, postnasal discharge, sneezing and loss of sense of taste and smell. Patients may be young or old. Children so afflicted are prone to experience itchiness of the nose and develop mannerisms such as sniffling, nose wrinkling and nose rubbing (fig. 1). The condition is frequently associated with bronchial asthma. One practitioner after another is consulted and then, often, a rhinologist, allergist or even a psychiatrist. The diagnosis may be hyperesthetic or vasomotor rhinitis. However, if certain criteria for

Fig. 1.—Nose rubbing as a mannerism in a child with allergic rhinitis. (From Criep, L. H.: Essentials of Allergy, Philadelphia, J. B. Lippincott Company, 1945.)

allergic diagnosis are present, then the condition is referred to as allergic rhinitis. These criteria include the presence of a family history of allergy, a personal history of other allergic manifestations (asthma, hay fever, eczema), blood and nasal eosinophilia, a history of clinical sensitivity and response to the administration of antihistaminic drugs and epinephrine. Inspection of the nose reveals a characteristic bluish gray appearance and reversible bogginess and edema. The turbinates are swollen. The nasal cavities are reduced in size and are frequently obstructed by mucous polypi. Unfortunately, the diagnosis is not always made early. The patient himself may think that he is subject to

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"recurrent colds" or chronic sinusitis. This latter diagnosis is often suggested because localized edema of the mucous membranes produces on transillumination and in roentgenograms of the sinuses transient shadows which are indistinguishable from those of hypertrophic and suppurative sinusitis.

DIFFERENTIAL DIAGNOSIS

Allergic rhinitis is easily differentiated from a common cold by the presence of the aforementioned criteria, by the absence of contagiousness and by its chronicity.

Chronic nasal and sinusal infection present none of the local characteristics of allergic involvement. The nasal mucous membrane in these instances is inflamed and red. Pus may be observed in the nasal cavity. The nasal smear contains a preponderance of polymorphonuclear leukocytes rather than eosinophils. Transillumination and roentgenograms show persistent opacities.

NORMAL FUNCTIONING

The nose is a functioning organ and not merely a passageway to convey air to the lungs. The inspired air must be cleaned, warmed and moistened properly before it is introduced into the delicate pulmonary alveoli. These functions are accomplished by the vibrissae of the nasal vestibule, by the nasal cilia,

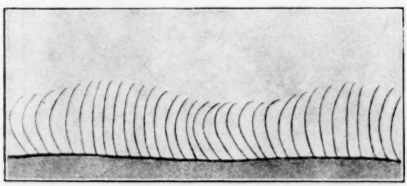

Fig. 2.—Ciliary beat. (Provided by Ciba Pharmaceutical Products, Inc.)

which constantly sweep toward the pharynx the blanket of mucus secreted by the mucosal glands, and, finally, by the vascular turbinates (fig. 2 and 3).

PATHOLOGIC FUNCTIONING

This normal functioning is altered as a result of allergic involvement. Local edema, hypertrophy and hyperplasia of the turbinates interfere with nasal drainage and ventilation (fig. 4 and 5). Normal nasal function is further affected if the cilia are injured by drugs, by chilling and by improperly humidified inspired air. Such damage renders the tissues more susceptible to infection. In young children the bony structure of the hard palate is also affected, producing the high arched palate, "Gothic arch," and dental deformities (fig. 6).

Under normal conditions the mucus secreted by the glands of the sinusal membrane is emptied through the ostiums into the nose. With the advent of allergic edema and increased activity of the mucous glands, this secretion becomes more gelatinous, and when expelled it falls in globular form into the nasopharynx, giving the patient the disagreeable sensation of postnasal "drip." Since the reaction is reversible, changes occur in the character and amount of mucus in the sinuses; the swollen and occluded ostiums do not function normally, and the air within the sinuses may become compressed or rarified. As a result of such fluctuations in air pressure, the patient may experience typical paroxysmal headache.

A discussion of the altered functioning responsible for nasal allergy would be incomplete without mention

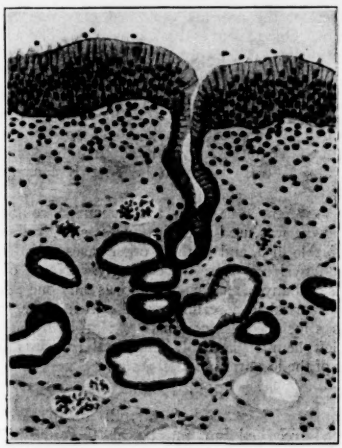

Fig. 3.—Normal nasal mucous membrane. (Provided by Ciba Pharmaceutical Products, Inc.)

of the role played by the parasympathetic nervous system. This action, in all likelihood, is linked to the cholinergic effect of histamine or histamine-like substances, presumably released in persons with allergic disease

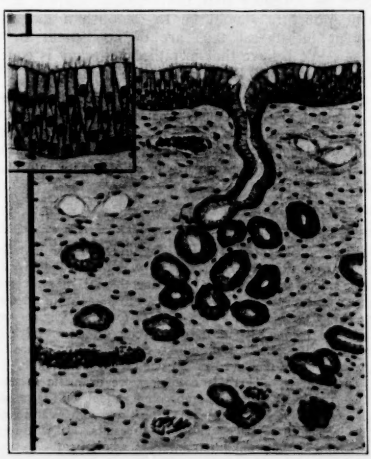

Fig. 4.—Allergic reaction in nasal mucous membrane. (Provided by Ciba Pharmaceutical Products, Inc.)

by exposure to specific allergens. This release produces increased capillary dilatation and permeability, with resulting extravasation of fluid and edema of the mucous

membranes. Since the central nervous system has a decided influence on the parasympathetic nervous system, it is obvious that emotional upsets wil profoundly affect the symptoms of allergic rhinitis.

PATHOLOGIC CHANGES

Certain pathologic changes occur as a result of altered nasal functioning. These include hypertrophy and hyperplasia of the connective tissue and epithelial cells, which assume the appearance of goblet cells. Pedunculation of the lining membrane produces polypoid degeneration. The polypi are of the mucous variety. The basement membrane is thickened. The cilia are destroyed. There occurs infiltration with lymphocytes, eosinophils and fibroblasts. Infection often supervenes.

CAUSATIVE FACTORS

Allergic rhinorrhea is affected by such endocrine factors as pregnancy and menstruation, by climatic conditions, by irritating fumes and chemicals, by emotional factors and by nasal obstruction and infection.

But the underlying causative factor in all these instances is exposure to a substance to which the patient is sensitive. This may be an inhalant, a food, drug, physical agent or bacterium. If the inhalant is a pollen, then the symptoms are seasonal and the condition is

Fig. 5.—Acute and chronic nasal allergy. (Provided by Ciba Pharmaceutical Products, Inc.)

referred to as pollen allergy or hay fever. However, seasonal allergic rhinitis may also be produced by the spores of certain molds, particularly stem rust and Alternaria and Hormodendrum organisms. These spores prevail throughout the country, but more so in the central states; they are seen particularly in the spring, summer and early fall. Other frequent inhalant allergens are animal danders (horse dander, feathers, rabbit hair, cat hair, dog hair), orris root, wool, insecticide, cotton linters and house dust. Milk, eggs and wheat are important food allergens. Next in order are fish, nuts and some vegetables and fruits. There are many reports of nasal allergy due to the ingestion, injection or local nasal application of drugs. Among these must be mentioned coal tar and benzol derivatives (acetylsalicylic acid and phenyl salicylate), the halogens (iodides and bromides) and various other drugs. Topical agents of special interest are the sulfonamide drugs, penicillin and "argyrol" (a silver vitellin preparation). I have seen several patients with allergic disease who experience intense and prolonged nasal reactions from the local instillation of these drugs. "Argyrol," which is used so much by rhinologists, is not an infrequent offender. Patients receiving "argyrol" tampons often protest about the discomfort its application causes them; in many instances this discomfort is not recognized as a manifestation of an allergic state. Heat, sunlight and cold are physical agents to which some patients react with allergic nasal manifestations. Cold is of particular importance as a causative agent. Symptoms are commonly present in the morning as the patient steps out of bed. The sudden transition from

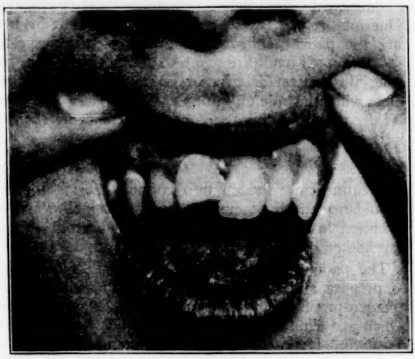

Fig. 6.—Dental deformities in allergic rhinitis.

the warm bed to the chilled air of the room produces nasal edema. This may be due either to allergy to cold or to reflex congestion of the nasal mucous membrane brought about because cooled air passing through the nasal chambers needs to be warmed. There are some who state the belief that nasal allergy may also result from sensitivity to the proteins of bacteria present in nasal infection.

ETIOLOGIC DIAGNOSES

The etiologic diagnosis establishes which of the aforementioned agents produce the patient's symptoms. It is made on the basis of a carefully taken history and special sensitization tests. The former often gives important diagnostic clues. The sensitization tests

Fig. 7.—Positive reaction to an ophthalmic test in a patient with allergic rhinitis and conjunctivitis. (From Criep, L. H.: Essentials of Allergy, Philadelphia, J. B. Lippincott Company, 1945.)

include cutaneous tests, ophthalmic tests and nasal or sniff tests. The uses and limitations of cutaneous tests (scratch and intradermal) cannot be discussed in this paper, except to mention that, if properly performed,

with allergens which are biologically potent, and if critically interpreted, these tests form an important link in the chain of evidence which may unearth the cause of the allergy. The ophthalmic test (fig. 7) consists in the instillation of a drop of the suspected material in the conjunctival sac. A positive reaction is manifested by local itching, congestion and lacrimation. One may reproduce the clinical manifestations by having the patient sniff a few grains of the suspected substance. If foods are suspected of playing a causative role, the patient is given trial or elimination diets, diets which include only four or five foods. The effect on the patient's clinical condition of enlarging the diet by supplying additional foods is noted.

TREATMENT

Treatment is divided into specific allergic therapy (avoidance and hyposensitization), medicinal measures, attention to nasal infection (topical and surgical) and psychotherapy.

The patient is instructed to avoid allergic factors, to prepare and maintain dust-free rooms and to use allergen-proof pillow slips. A diet is given from which are eliminated the foods to which the patient is sensitive. Hyposensitization with increasing doses of autogenous extract of house dust or with extracts of fungi is undertaken. Irritating fumes (gasoline, paint) and noxious occupational factors are also avoided.

Medicinal treatment is intended to produce palliative relief. This includes the oral administration of 0.375 grain (24.4 mg.) of ephedrine and 0.167 grain (10.8 mg.) of phenobarbital every four hours when necessary. Antihistaminic drugs may be helpful. These include several preparations which vary in effectiveness as well as frequency of undesirable side effects with different patients. The following agents may bring symptomatic relief: "neoantergan," 50 mg. every four hours, and "thephorin" (2-methyl-9-phenyl-1, 3, 4, 9 tetrahydroindeno [2.1-c] pyridine), 50 mg. every four hours. Some patients experience sleeplessness from its administration. "Thenylene" (N,N'-dimethyl-N'-[alpha pyridyl]-N'-[alpha thenyl] ethylenediamine), 50 to 100 mg. every four hours, is an effective histamine antagonist, producing occasional drowsiness. "Benadryl hydrochloride" (beta-dimethylamino-ethyl benzohydryl ether hydrochloride), 25 to 50 mg. and "pyribenzamine hydrochloride" (pyridyl N'-benzyl N-dimethyl ethylenediamine), 25 to 50 mg. every four hours, may also be prescribed. If side effects, such as drowsiness, palpitation, nausea and vomiting, occur, treatment with these drugs should be discontinued. Local vasoconstrictors, most of which contain ephedrine or epinephrine derivatives, should be used sparingly, for it has been established that their continued use is followed by secondary congestion and intensification of symptoms. If nasal drops are ordered, the patient should be instructed in their proper use, employing the Proetz position.

Local nasal pathologic changes and mechanical obstructions, such as deflected septums, polypi and hyperplastic tissue, must be removed in order to restore nasal function, for this not only affords symptomatic relief but helps prevent nasal and sinusal infection, a frequent complication of untreated and unrecognized nasal allergy. Rhinologic treatment should always be conservative at first, especially if there is a decided allergic factor.

Cauterization with trichloracetic acid and electrocoagulation are procedures which have afforded temporary relief at times. Ionization of the nasal membrane is not only not beneficial but harmful. Roentgen ray therapy to the nose is of doubtful value. Radon or radium therapy or roentgen therapy to the nasopharynx is helpful in the presence of associated lymphoid hyperplasia and infection in that region. Tonsillectomy is not specifically indicated.

It is obvious, therefore, that good therapeutic results are predicated on the closest possible cooperation between allergists and rhinologists, with the realization that a considerable percentage of patients suffering with nasal symptoms are allergic and that failure to recognize early and treat properly the allergic state in these patients accounts for many therapeutic failures. On the other hand, many patients suffering with allergic rhinitis will fare better if given the benefit of rhinologic attention.

Allergic rhinitis of long standing produces profound emotional changes: Appetite is impaired; losses in weight occur; sleep is disturbed; work and efficiency are interfered with, and the patient is not well. It is equally true that emotional upheavals frequently increase the severity of the nasal symptoms. Hence, there is necessity for proper evaluation and understanding of allergic patients as human beings.

Allergic and rhinologic attention, coupled with psychotherapeutic measures, will therefore increase the number of satisfactory therapeutic results obtained in patients with allergic rhinitis.

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ABSTRACT OF DISCUSSION

Dr. Theodore L. Squier, Milwaukee: Allergic rhinitis frequently is the precursor of asthma, as stated by Dr. Criep. Early differentiation of atopic from infectious rhinitis, followed by suitable treatment, can prevent the development of this incapacitating complication in a large number of patients. Accurate diagnosis, therefore, is essential. The value of a carefully taken history cannot be overstressed. Although the limitations of cutaneous testing were not especially emphasized, the need for confirmatory evidence by clinical trial or observed reaction was suggested. Cutaneous tests, subject at best to many inadequacies and technical errors, must always be correlated with the history. Only then can this valuable diagnostic procedure give reliable information. When the nostrils of patients with allergic rhinitis are tightly occluded, as if with a clothespin, emotional upsets are understandable. Violent snorting and blowing is frequent, although patients recognize that the resultant mechanical irritation serves only to increase the discomfort. In such circumstances physicians are tempted to overemphasize psychic factors and overlook the underlying somatic reactions actually responsible for symptoms. Nose drops of various kinds, prescribed for temporary relief, are used with increasing frequency because of the momentary relief afforded. Dr. Criep spoke of the prolonged nasal reactions from local medication which are sometimes observed. Repeatedly, I have seen patients in whom mild seasonal allergic rhinitis persisted long after contact with the specific causative agent had ceased, because of the continued use of nose drops. Occasionally hypersensitivity to one of the chemical constituents of the nose drops is responsible. More often there is only mechanical irritation, with consequent damage to the nasal mucosa, which then appears pale and waterlogged. The appearance of the overmedicated nose is indistinguishable from that during acute allergic episodes. Such patients will not obtain symptomatic relief until nose drops are discarded and local irritation is ended.

FUNDAMENTALS OF PHYSICAL MEDICINE OF INTEREST TO GENERAL PRACTITIONERS

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Adequate and successful use of physical agents can be expected only if there is understanding of the basic physiologic concepts underlying their use and application. It would be impossible to discuss here the basis for all of the modes of treatment employed in physical medicine. Therefore, this paper is being limited and is designed primarily to present some of the information that has been and is being accumulated in experimental work.

The agent most commonly employed in physical medicine is heat. Despite wide application of heat in the treatment of many conditions, its physiologic effects are poorly understood. Two factors must always be considered in heat therapy: (*a*) the amount of heat successfully applied to the tissues, i. e., the resultant of heat input and heat loss, and (*b*) the extra amount of heat produced in the tissues as a consequence of oxidative processes which have been accelerated by the applied heat. Too often these complementary phenomena have been neglected in the analysis of heat therapy.

Heating by conduction is the commonest method. There is an exchange of molecular energy from the warmer object to the cooler, which is achieved only by contact. Since conductive heating is frequently employed in home treatments, the superiority of paraffin in producing prolonged hyperemia is worthy of mention.[1]

The so-called convective methods, in which hot air or hot water is employed, are also essentially conductive heating, as are radiant energy sources in which the far infra red range (wavelengths of greater than 1,500 millimicrons) is employed. With radiant energy in the near infra-red zone, slightly deeper heating may result, since some of the energy is transmitted through the skin to the subcutaneous levels, where it is absorbed more efficiently.

In all of these methods, heating is relatively slow and, consequently, any real change in temperature can be achieved only after a period of time. Depth heating is produced only by slow conduction of heat from the surface to the deeper tissue layers.

None of these methods are really safe when used on patients suffering from impaired circulation. Ischemic limbs do not tolerate high temperatures. Heat cradles with thermostatically controlled temperatures of 85 to 90 F. have been advocated, but even here tissue metabolism may be accelerated to a level with which the damaged vascular bed cannot always cope and injury may result. Vasodilatation can be produced by indirect means in an extremity without greatly accelerating metabolism, that is, reflex vasodilatation produced when some other extremity or part of the body is heated. Intact sympathetic innervation of the part is necessary for this mode of heat therapy to be effective. Direct application of heat when there is obstruction of venous circulation is also dangerous. Here the arterial pathways can supply the demand for additional blood, but the poor venous return does not allow for efficient cooling and dissipation of heat, and, consequently, not only may the tissues be heated to an undesirably high level but considerable edema may develop.

The most efficient methods of heating the deep tissue occur as a consequence of the conversion of high frequency electrical currents into heat. To be most effective, this conversion must take place in the vascular tissues, where body heat is usually being produced. The high frequency currents used are alternating currents having frequencies greater than those frequencies which elicit a neuromuscular response. The term "short wave diathermy" is somewhat misleading, since it suggests that the patient is treated with radiation, whereas, in actuality, the patient is made part of a high frequency circuit. These currents can be applied so as to produce actual destruction of tissue. Only those applications which produce no visible destruction of tissue are considered medical. However, rises in temperature can be obtained which, while resulting in no visible destruction, do produce functional impairment, as manifested by aggravation of pain, increase in edema and other symptoms of overheating. Obviously, it is important to be able to treat in such a manner as to prevent the occurrence of these secondary effects.

The development of heat in tissues by short wave diathermy can be accomplished with either a condenser field or an induction field. Wavelength plays a less important role in heating than the power output of the apparatus, the energy delivered to the patient and the technic employed. For employment of the condenser field, three types of applicators are available: (*a*) the pad electrode, which is not effective for deep heating, producing only superficial effects, and, therefore, is not recommended, (*b*) the cuff electrode, which does not have universal application; hence, hot spots and some excessive surface heating are likely to develop, and (*c*) the air-spaced electrode, the best of the three. Since this method of heating depends on the specific conductivity of the electrolyte in the field, a certain amount of differential heating is bound to result. It has been shown that in the condenser field the power absorption is greater in fat than in other tissues, and, consequently, overheating can result. Fortunately, the efficiency of the blood stream in dissipating heat is such that there is a tendency to equalize temperatures throughout the area and so prevent such specific heating.

The heating of tissue by the use of induction is preferable, since it has more desirable heating characteristics, it is more adaptable to the anatomic configurations and power input into the tissues can be achieved more effectively. This field generates heat in an electrolyte in direct proportion to the conductivity of the electrolyte; it produces heat dominantly in vascular tissue where it is normally produced, and it exhibits little specific differential heating.

The intensity of the magnetic field within the coil is at a maximum immediately adjacent to the coil. Therefore, if the coil is wrapped snugly around the part

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treated, heating will be produced faster in the tissues closer to the coil than in the deeper tissues. This will lead to excessive heating of the skin, which must be avoided. In order to produce more heat in the deep tissue, spacing between coil and tissue must be provided. A layer of absorbent toweling, approximately 10 per cent of the diameter of the coil, is adequate and assures the maximum ratio of depth dose to skin dose. It is important in this respect to recall that a reduction in the flow of blood of around 10 per cent can result from the application of pressure to the limbs of as little as 10 mm. of mercury.[2] Careful application of apparatus is necessary to prevent this effect.

Under ordinary conditions of application of heat, vasodilatation may be brought about through the axon reflex mechanism as a consequence of thermal stimulation of sensory receptors. However, heat may also stimulate other cutaneous receptors which reflexly induce vasoconstriction and reduction of the flow of blood. The possibility that one or the other of these antagonistic factors may become dominant must be kept in mind. Results in recent experimental work on the rate of the flow of blood in animals being treated with short wave diathermy make it necessary that previous impressions of the mechanism of deep heating be carefully reviewed. In one set of experiments, Mart and Miller [3] measured the rate of the flow of blood through the coronary vessels before, during and after short wave diathermy over the heart and observed no significant changes in the flow of blood. Subsequently, a group of investigators at Iowa State Medical School [4] treated the hind limbs of dogs with diathermy and observed the femoral arterial inflow into the limb to be reduced. They extended this study to a comparison of denervated and nondenervated limbs and noted similar reductions, with slightly higher rises in temperature in denervated limbs. These results suggest that a portion of the deep-heating effects of short wave diathermy are a consequence of reduced flow of blood through heated tissues. Is this reduced flow a primary or a secondary effect?

It is well known that a rise in tissue temperature will increase local circulation, raise capillary pressure and increase tissue fluid exchange and lymphatic drainage. However, if for any cause tissue fluid accumulates, the resultant pressure on the venous channels will interfere with general circulation. The presence of frank edema may not be necessary for this effect to be produced, since edema is not necessarily detected until a collection of approximately 8 milliliters of fluid per hundred cubic centimeters of tissue has occurred.[5] Such a situation is not without parallel, since the possible presence of low grade edema has been suggested to account for the poor results following local short wave diathermy in patients suffering from chronic arthritis.

The decided increase in implantation of metals by surgical means has revived discussion of the potential dangers of short wave therapy in the postoperative treatment of patients who have had operations of this type. Presumably, injury to the tissues contiguous to the metal would result because of distortion or concentration of the short wave field at the implant. This problem has been investigated recently by two groups of investigators.[6] In general, it appears that, if circulation is not impaired, short wave diathermy, with the usual precautions, can be safely applied to areas where surgical metals are situated in the deep tissues. However, caution must still be exercised, since overheating of tissues may occur around metallic parts located on or near the surface.

The subject of short wave diathermy cannot be closed without a consideration of dosage. At the present time there is no simple method of estimating the amount of energy absorbed by any single patient. As a consequence, dependence is placed on the most empiric procedure possible, that of using the patient's skin tolerance as the guide to the final dosage to be employed. In patients with impaired thermal sense or with peripheral vascular disease, burns may result. This is of special importance in aged patients, who frequently have lessened cutaneous sensibility.

During the past ten to fifteen years, there has been an active search, particularly by Dr. Frank H. Krusen of the Mayo Clinic, for sources of electromagnetic waves with much shorter lengths than those now commonly employed in so-called short wave diathermy. In the latter method, wavelengths of 21.95, 10.98 and 7.32 M. are available in contrast to the newest band of 12 cm. or 2,400 to 2,500 megacycles per second now allocated to physical medicine by the Federal Communications Commission. Radio frequency wavelengths of a few centimeters have a number of interesting properties which might make them of particular value in this field of specialization. Microwaves, so-called, have optical properties. They can be reflected, refracted and diffracted. They can be focused with a suitable metal lens into sharp beams. Furthermore, they may be selectively absorbed. A new field of research, called "microwave spectroscopy," gives promise of furnishing valuable information on molecular structure. Oxygen and water molecules (in gaseous form) absorb particular microwave frequencies. Whether or not the various biologic mediums will absorb microwaves selectively is not yet known. It has been shown that penetration of fat is only slightly less favorable than penetration in muscle tissue.[7] This is in contrast to the greater absorption by fat of 11 M. energy. No toweling is needed for spacing, and the subject is not tied down to the apparatus, as with short wave diathermy.

Most physicians have heard of the employment of microwaves in "radar," in which short radio frequency waves are discharged in bursts as a pulse-echo system. This type of energy is not feasible for therapeutic purposes, and continuously emitted energy is preferred. A cavity magnetron which generates continuous waves is now available. An indication of the potential superiority of waves of 12 cm. for therapeutic purposes is pointed out in a report from the Radiation Laboratory at the Massachusetts Institute of Technology. It was observed that the absorption factor of water at 100 F.

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for microwaves having a frequency of 2,450 megacycles per second was approximately seven thousand times that for radio waves having a frequency of 27 megacycles per second. The latter frequency is commonly used in short wave diathermy.

Studies have just been begun on evaluation of the usefulness of centimeter waves. Several authors have reported that exposure to radar radiations has no effect on personnel.[8] Since these investigations were concerned with exposure to radar pulses—brief, rapid bursts of energy—they were of value only in dispelling fears of radar personnel regarding possible injury. Results of exposure to continuous microwave energy have just recently been presented in a preliminary report by Krusen and his associates.[9] Although they used equipment which produced continuous microwave energy at a frequency of 3,000 megacycles per second (10 cm.) and used only a single type of applicator, the general conclusions they have made will in all probability be applicable to a wave of 12 cm.

A number of investigators, such as Hollmann in Germany[10] and Hemingway and Stenstrom in this country[11] have theoretically discussed the use of centimeter wavelengths from the standpoint that they could be focused so as to cause heating of deep tissues without excessive heating of the skin. Krusen and his associates[9] have now shown that temperature of deep tissue can be raised by microwaves. Measurements were made of cutaneous, subcutaneous, superficial muscle and deep muscle temperatures following application of microwave energy. Unfortunately, as was the case in studying the effects of the usual short wave diathermy technic, it was impossible to measure temperatures during exposure to the high frequency field. An energy output of approximately 65 watts for a period of twenty minutes raised cutaneous, subcutaneous and muscle temperatures an average of 3 to 5 degrees Centigrade. This means that even with similar rises in temperature of all tissues, the final temperature of deep tissue is higher than that of subcutaneous or cutaneous tissue. Furthermore, the rate and degree of cooling is always more rapid in superficial tissues than in deeper ones. The flow of blood, as measured in the femoral vein, was approximately doubled as a consequence of the treatment. This is in sharp contrast to the results previously mentioned, wherein reductions in the flow of blood were observed following short wave diathermy. Although extension to human beings of the results obtained from experiments with animals is always dangerous, heating with microwaves offers promise of considerable usefulness in the practice of physical medicine. Experimentation in progress will permit reports at a later date regarding the clinical applications of this new tool.

The effects of heat on human beings are complex, and it is impossible in the present state of knowledge to do more than suggest the potentialities of heat therapy. Extension of knowledge will continue with the continued development of the scientific approach to physical medicine.

There is another mode of treatment available to general practitioners that has not had such extensive exploitation as the use of heat. The introduction or exchange of ions by means of the direct current within the tissues has not been popular in this country, but has been extensively employed in Europe, especially by the French.[12] Iontophoresis may have wide potential application in general practice.

The introduction of medicaments into the body by common ion transfer has distinct theoretic limitations. The low velocity of the ions and the low potential at which they are introduced precludes penetration deeper than the superficial layers of the skin. Furthermore, the quantity of any drug that can be introduced is certainly infinitesimal. Yet, despite these limitations, both local and systemic responses have been obtained.

The systemic response is probably due to diffusion of the drug into the circulating blood. A number of foreign investigators have expressed the belief that the physical characteristics of the current produce an effect on the colloids of the organism and so may account for some of the beneficial effects of iontophoresis.

Over thirty different anions and cations have been employed to treat as large a number of clinical entities. With some ions local effects predominate, as in the case of cocaine, which produces anesthesia and edema of the skin primarily at the electrodes; with others, systemic effects appear before any local reaction occurs, as in the case of strychnine, and in still others, such as histamine, "mecholyl chloride" (acetyl-β-methylcholine chloride) and epinephrine, both local and systemic reactions can be produced. Common ion transfer of the salts of the metals appears, on the best of available evidence, to have primarily local effects.

Iontophoresis has been employed with apparent advantage in a number of peripheral vascular disorders and dermatologic conditions. Iontophoresis with "mecholyl chloride" or histamine produces relief from pain, swelling and stiffness, but does not increase function of the joints, strength of muscle or relief from fatigue. The main positive effects are in superficial dilatation of the capillary bed, with resultant intensive hyperemia. Copper has been used effectively in treatment of so-called "athlete's foot." Unfortunately, there is no completely satisfactory scientific evaluation of the efficacy of "common ion transfer," and the enthusiastic clinical reports have, in general, not been supported by statistical evidence. This mode of treatment has been of value in selected cases, but until more is known of the basic mechanism, this method cannot be considered to have broad general application to clinical conditions.

COMMENT

It was not my purpose in this paper to either praise or decry any mode of treatment, but to bring to attention the need for objective evaluation of the tools of physical medicine. It is gratifying not only to observe the progress that has been made in this respect but also to note the development of teams of trained investigators who are attacking the fundamental problems of physical medicine. It is only through the unequivocal establishment of the principles underlying the practice of physical medicine that treatment can be properly prescribed and the patient's progress adequately evaluated.

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EXPERIENCES WITH TETRAETHYLAMMONIUM CHLORIDE IN HYPERTENSION

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Tetraethylammonium chloride is a quaternary ammonium compound which blocks the transmission of nervous impulses across autonomic ganglions. Acheson and Moe[1] first demonstrated this ganglionic site of action in dogs and cats, using as test responses the reactions of the blood pressure, heart rate and nictitating membrane. They demonstrated that when the compound is injected intravenously it produces a prompt fall in arterial pressure in animals in which the arterial pressure is elevated from the increase in sympathetic tone of barbiturate anesthesia. After section of the cervical cord in such animals the sympathetic tone is abolished, and the drug then fails to produce further change in pressure. With restoration of the pressure and vascular tone by stimulation of the distal segment of the sectioned cervical cord the administration of the drug again produces a fall in pressure to the same level as that found in the absence of sympathetic tone. Acheson and Moe also demonstrated that there is no local action of the drug on blood vessels since intra-arterial injection fails to produce changes in blood flow. The drug does not prevent the vasopressor activity of epinephrine or angiotonin, which act directly on the arterioles, so that hypertension induced by large infusions of such substances is not altered in the experimental animal.[2]

EFFECT OF AUTONOMIC NERVOUS SYSTEM BLOCKADE IN MAN

In man a similar ganglionic blockade of both the parasympathetic and sympathetic nervous systems may be produced by the intravenous or intramuscular injections of tetraethylammonium chloride.[3] The effects of such a blockade have already been described,[4] and consist principally of decrease in blood pressure, with the development of postural hypotension, tachycardia, increase in blood flow in the extremities resulting in a rise in cutaneous temperature,[5] cessation of sweating, a dry mouth, cessation of gastrointestinal movement and a decrease in gastric secretion,[6] loss of bladder tone,[7] loss of ocular accommodation with partial pupillary dilatation and occasionally ptosis of the eyelids.

DOSE OF TETRAETHYLAMMONIUM CHLORIDE IN MAN

The decrease in blood pressure is usually rather transient following an intravenous injection, and the duration of the effect is dependent in part on the amount administered. In order to obtain measurable dilatation of the peripheral vascular bed, 500 mg. of the drug should be administered intravenously. The effects of smaller doses may not be as complete. In general, 300 to 500 mg. (6 to 10 mg. per kilogram of body weight) has been injected intravenously in the studies of the change in blood pressure and at least 500 mg. (between 7 and 10 mg. per kilogram of body weight) in the studies of the changes in peripheral blood flow. The intramuscular dose should probably not exceed 20 mg. per kilogram of body weight. Oral administration is not satisfactory because of poor absorption from the gastrointestinal tract.

MECHANISM OF THE FALL IN ARTERIAL PRESSURE WITH TETRAETHYLAMMONIUM CHLORIDE

Arterial pressure is dependent on the volume of blood in the arterial system and the character of the volume elasticity of the arterial walls. The volume of blood in the arteries is dependent on the cardiac output, which is a function of the heart rate and stroke volume, as well as the rate of flow out of the arterial system through the arterioles. Small changes in the cardiac output will produce relatively little change in the arterial pressure because of the compensatory influence of the reflex sympathetic vasoconstrictor tone.

The rate of flow out of the arterial system at a given head of pressure is dependent on the degree of dilatation or constriction of the arterioles. This is controlled normally by reflex sympathetic vasoconstrictor tone but may also be affected by structural changes in the walls of the vessels and by humoral substances, such as epinephrine or angiotonin, acting directly on them. The decrease in arterial pressure usually noted after injections of tetraethylammonium chloride must be explained either as a result of a diminution of cardiac output or a decrease in sympathetic vasoconstrictor tone resulting in a greater outflow of blood from the arteries. It has been found that after the administration of the drug there is either no change in cardiac output or more commonly an increase in the output in both normal and hypertensive subjects probably associated with the increase in heart rate from the parasympathetic blockade.[8] Therefore, in the presence of an augmented cardiac output, the fall in arterial pressure must be explained on the basis of an increased outflow of blood from the arteries because of the diminution in arteriolar constriction controlled by the sympathetic nervous system. The extent of the fall in arterial pressure at a given initial pressure must therefore reflect in part the role of the sympathetic

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vasoconstrictor tone in the maintenance of the pressure at that level. On the other hand, if the same degree of arteriolar dilatation occurred at different pressure levels, a greater decrease in pressure might be expected in the arteries under the higher initial pressure and therefore would not necessarily indicate that these vessels were under a greater sympathetic tone.

It is unjustified to assume, however, that the decrease in pressure noted after injections of tetraethylammonium chloride will give an absolute measurement of the role of reflex vasoconstriction in maintaining the level of the arterial pressure. The change in heart rate, if great, may tend to prevent as pronounced a fall in diastolic pressure as might be experienced from vasodilatation alone. It is probable, however, that the change in the cardiac output resulting from the tachycardia or the tachycardia itself are minor factors in altering the arterial pressure in the majority of the cases, for the average increase in rate is only 19 beats per minute.

In animal experiments the drug appears to produce a complete blockade of reflex vasoconstrictor tone. Observations on peripheral blood flow in man would suggest that in the doses used the blockade is not complete. There is a somewhat greater increase in peripheral blood flow in the feet after lumbar paravertebral block than after injection of tetraethylammonium chloride.[5]

While these limitations are recognized, they do not prevent the use of the drug in the evaluation of the role of sympathetic vasoconstrictor tone in the maintenance of arterial pressure. It is likely that in most instances changes in the diastolic pressure will parallel the changes in sympathetic tone produced by the drug.

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THE EXTENT OF FALL IN BLOOD PRESSURE

A study of the role of the reflex sympathetic vasoconstrictor tone in the maintenance of arterial presure at different initial levels of pressure has been made on 437 patients. The drug has been administered intravenously in doses of 300 to 500 mg. to patients in whom determinations of blood pressure were made for several minutes before the injection and continued every thirty to sixty seconds after the injection for fifteen to thirty minutes. In general the pressure is diminished in the majority of the cases and remains depressed for five to fifteen minutes. Evidence of diminished sympathetic tone may be present for twenty to forty minutes after an injection. Postural hypotension and increased peripheral blood flow persist after the arterial pressure has returned to its initial level. With the tachycardia resulting from diminished vagal tone there is a somewhat greater fall in the systolic pressure than in the diastolic pressure. Changes in the diastolic pressure, therefore, have been used to indicate the alterations in the level of the pressure produced as a result of the drug.

The extent of the decrease in pressure is largely dependent on the initial elevation of pressure (chart 1). Normal subjects with low initial diastolic pressures uncommonly experience a significant decrease in pressure after injection of the drug. In fact, there is in some subjects a slight rise in diastolic pressure. Thirty-five per cent of 82 persons with initial diastolic pressures below 80 had no change or a slight increase in diastolic pressure after receiving tetraethylammonium chloride. These were in general healthy subjects who were volunteers for the observations. Between 40 and 50 per cent of the patients studied with normal initial diastolic pressures failed to have a fall in pressure of as much as 10 per cent of the initial level. It would seem likely that in this group sympathetic vasoconstrictor tone played only a small role in the maintenance of arterial pressure. Seventeen patients with low diastolic pressures, however, experienced a 20 per cent or greater decrease in pressure. With few exceptions these were patients with hyperreactive vascular responses or other vascular abnormalities and might be thought to have a greater degree of vasoconstrictor tone.

Of the 91 patients with initial diastolic pressures between 90 and 109 mm. of mercury there was a greater average fall in pressure after administration of tetraethylammonium chloride. Only 24 per cent of the patients failed to have at least a 10 per cent decrease in diastolic pressure.

In the 228 hypertensive patients with initial diastolic pressures above 110, the drug produced progressively greater mean decreases in pressure with higher initial

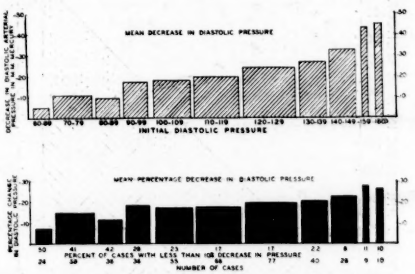
MEAN DECREASE IN DIASTOLIC PRESSURE
INITIAL DIASTOLIC PRESSURE
MEAN PERCENTAGE DECREASE IN DIASTOLIC PRESSURE
PERCENT OF CASES WITH LESS THAN 10% DECREASE IN PRESSURE
NUMBER OF CASES

Chart 1.—Mean decrease in diastolic pressure in millimeters of mercury experienced in 437 patients who received 300 to 500 mg. of tetraethylammonium chloride intravenously. The width of each column expresses the number of cases arranged in groups according to the initial diastolic pressure. The lower solid black columns represent the mean percentage change from the initial diastolic pressure after administration of tetraethylammonium chloride.

diastolic pressures. Only 16 per cent of these persons failed to have more than a 10 per cent decrease in pressure after the injection. It would seem likely that in these patients the blood pressure was maintained with less reflex sympathetic vasoconstrictor tone than in those patients who had greater decreases in pressure. On examination of the clinical records of the 37 patients, local angiospasm of the retinal vessels was less commonly found; there was a greater incidence of retinal arteriosclerosis, cardiac enlargement and impaired renal excretory function or nephritis than in the group that had larger decreases in pressure.

It is apparent from chart 1 that the blockade of sympathetic tone produced by the drug resulted in progressively greater mean decreases in diastolic pressure from a 4 mm. fall at an initial diastolic pressure between 60 and 69 to a 44 mm. fall when the initial pressure was above 160 mm. of mercury. The average percentage change in diastolic pressure is greater at pressures above 90 and increases slightly but progressively at higher levels. This suggests that there is some increase in sympathetic tone in the hypertensive state, but it is not proportionately much greater at higher pressure levels. There were, however, large

individual variations in the response to the drug which would suggest that in some patients the sympathetic vasoconstrictor tone was of more importance in maintaining the pressure, while in others it played a small role and the elevated pressure was maintained by other causes. In a small number of patients with high diastolic pressures, the fall in pressure was so great that it was followed by a momentary state of collapse and the clinical appearance suggestive of cerebral anoxia. A 300 to 500 mg. injection of tetraethylammonium chloride may be dangerous in patients with a diastolic pressure over 150.

Some degree of hypertension persisted after the fall of arterial pressure produced by the administration of tetraethylammonium chloride, even though sympathetic tone was decreased (chart 2). This would suggest that other factors such as arteriolar sclerosis, endocrine or humoral mechanisms were also important in the maintenance of an elevated diastolic pressure. It is apparent that in a consideration of the mean pressure changes at different diastolic levels the diminution of sympathetic

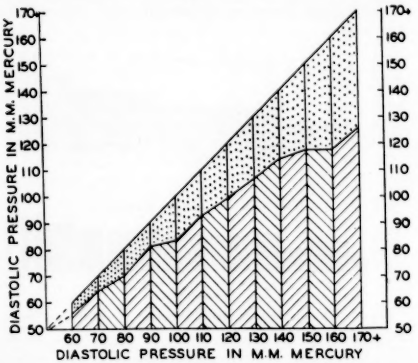

Chart 2.—The stippled area represents the mean decrease in pressure in millimeters of mercury at each diastolic level produced by 300 to 500 mg. of tetraethylammonium chloride intravenously in 437 patients. The decrease in pressure is greater at higher initial pressures. The role of reflex sympathetic tone in the maintenance of pressure at different pressure levels will be reflected by the stippled area. Hypertension may still be present, however, after the decrease in sympathetic tone following administration of tetraethylammonium chloride.

tone produced in this manner may bring about greater decreases in pressure at higher diastolic levels but cannot be expected to produce a fall in pressure to normal.

This is similar to the experience found after splanchnicectomy for hypertension. The operation also decreases the extent of the sympathetic vasoconstrictor tone, but it does not commonly produce a fall in pressure to normal. In the patients with high diastolic pressures greater decreases in pressure are experienced than in those with lower diastolic pressure, but usually some degree of hypertension will persist after the operation.

FAILURE TO EXPERIENCE A DECREASE IN PRESSURE

It has been noted that certain patients who are apprehensive about the procedure of multiple blood pressure measurements and intravenous injections may fail to respond to tetraethylammonium chloride on that occasion but respond later to an intramuscular injection or to the same procedure on another occasion when they are no longer apprehensive. It has been shown in animals [2] that hypertension produced by the infusion of epinephrine or angiotonin may not be altered by tetraethylammonium chloride. It seems likely that these patients may have epinephrine-like substances present at the time of injection which will alter the effects of tetraethylammonium chloride by the direct action of the pressor substance on the arterioles.

Other patients who are not apprehensive may fail to have a significant decrease in pressure after repeated injections of the drug though they may have an increase in peripheral blood flow, postural hypotension and other manifestations of alteration in the degree of sympathetic tone. It would seem likely that the recumbent blood pressure in such cases is maintained without the aid of sympathetic vasoconstrictor tone.

In a few subjects there is an increase in heart rate of 40 to 50 beats per minute with a resulting tachycardia of 140 to 150. In some patients with such a rapid rate there may still be a fall in diastolic pressure; in others, however, it is possible that diastole is too short to permit the usual fall in diastolic pressure.

In 6 patients with repeated injections, there was a change in the response of the blood pressure to the drug. The patient would have a moderate decrease in pressure with the initial injection or the first two or three injections, but with subsequent injections the diastolic pressure failed to change even though other evidence of blockade could be demonstrated. There is no satisfactory explanation for this at present.

EVALUATION OF SYMPATHETIC TONE IN THE SELECTION OF CASES FOR OPERATION

It is unlikely that patients with hypertension maintained with a low degree of sympathetic vasoconstrictor tone will be greatly aided by operative procedures designed to interrupt the sympathetic control of vessels. Evaluation of this functional type of vasoconstriction is difficult and in general unreliable. Various types of pressor and depressor responses have been utilized as a test of the variability of blood pressure in order to better select candidates for the successful operative treatment of hypertension. No test has been satisfactory.

Because of the action of tetraethylammonium chloride in producing an autonomic blockade, it would seem to be a better method of evaluating the changes in pressure that could be expected by operative procedures. On consideration of the effects of the drug on the circulation, it is obvious that it will not simulate precisely the circulatory changes to be found in the absence of sympathetic tone alone. It may be a useful adjunct, however, in roughly estimating the extent of the reflex vasoconstrictor tone in the selection of candidates who may be improved by operative procedures on the sympathetic nervous system.

To evaluate this type of depressor response, candidates otherwise suitable for splanchnicectomy have been given injections of 300 to 500 mg. of tetraethyl ammonium chloride intravenously, and the ensuing alteration in the blood pressure has been carefully noted. In the performance of the test, excitement and alarm on the part of the patient is avoided or the test is repeated on another occasion. The response was valuated by

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the percentage change between the initial diastolic pressure and the lowest diastolic pressure obtained over a three minute period after the injection of the drug.

At present, 58 patients who received injections of tetraethylammonium chloride in these doses have been reexamined six to eighteen months (average one year) after supradiaphragmatic splanchnicectomy and lower dorsal ganglionectomy (Peet). The depressor response to tetraethylammonium chloride was not considered in accepting or rejecting suitable candidates for the operation. Ten patients were studied in a similar manner early in our experience but were given small intravenous doses or intramuscular injections and are not included because of the uncertainty of a standard reaction pattern.

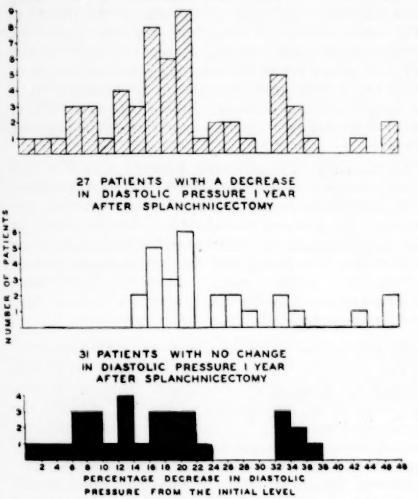
27 PATIENTS WITH A DECREASE IN DIASTOLIC PRESSURE 1 YEAR AFTER SPLANCHNICECTOMY
NUMBER OF PATIENTS
31 PATIENTS WITH NO CHANGE IN DIASTOLIC PRESSURE 1 YEAR AFTER SPLANCHNICECTOMY
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48
PERCENTAGE DECREASE IN DIASTOLIC PRESSURE FROM THE INITIAL LEVEL

Chart 3.—The percentage decrease in diastolic pressure produced by 300 to 500 mg. of tetraethylammonium chloride intravenously before operation in 58 patients who have been followed for an average of one year after splanchnicectomy.

The 58 patients have been divided into those in whom a decrease in blood pressure of more than 10 per cent of the initial diastolic pressure was noted one year after the operation, 27 patients, and those who had even less change in pressure or an increase in pressure after operation, 31 patients.

It is noted in chart 3 that all patients who had a decrease in pressure after operation had a considerable change in the preoperative diastolic pressure after the administration of tetraethylammonium chloride. The smallest change in diastolic pressure after administration of the drug was 14 per cent of the initial diastolic level.

In contrast to this were the 31 patients who had no change in diastolic pressure after operation. Ten of the 31 failed to have even a 10 per cent change in their preoperative diastolic pressure after receiving tetraethylammonium chloride. Four more had less than 14 per cent decrease in pressure. The other 17 patients, however, had responses similar to the responses of those who had improved after the operation. It would seem probable that the patients who failed to have a decrease in diastolic pressure of 10 per cent or more after injections of tetraethylammonium chloride might not be expected to have as good an effect from the operative procedure. Final conclusions, however, should not be made from such a small series of cases. As the series is extended, it is probable that some patients who were alarmed or excited at the time of the injection will fail to respond to the drug, but may nonetheless have a good result from the operation. A good response to the drug, on the other hand, does not necessarily indicate that a successful result from splanchnicectomy can be expected. The chances of a successful result are somewhat better.

RESPONSE OF THE BLOOD PRESSURE AFTER SPLANCHNICECTOMY

If the sympathetic vasoconstrictor tone in the splanchnic area was important in the maintenance of blood pressure in the supine position, it would seem likely that the extent of the fall in diastolic pressure with tetraethylammonium chloride after section of these nerves would be diminished. This was observed in the patients who had experienced some fall in pressure one year after the operation. Before operation there was a mean decrease in diastolic pressure of 24 per cent in response to the drug, while after operation there was an average decrease of only 9.6 per cent (chart 4). There was a somewhat better than average response to the drug before operation and a decidedly poorer than average response after operation. In these cases it would appear likely that the sympathetic tone in the splanchnic bed had contributed significantly to the maintenance of the increased arterial pressure.

On the other hand, the patients who failed to have any change in pressure after the operation in general had an average preoperative response to tetraethylammonium chloride somewhat below the average levels found in the study of the 437 patients. The preoperative and postoperative decrease in diastolic pressure with the drug averaged 17.5 and 15.8 per cent, respectively. It is possible in these patients that the splanchnic vascular bed did not contribute significantly to the increased peripheral vascular resistance, since dener-

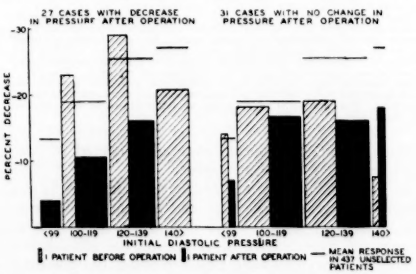

Chart 4.—A comparison of the difference in response of the diastolic pressure to tetraethylammonium chloride before and one year after splanchnicectomy. The shaded columns represent the mean percentage decrease in diastolic pressure following administration of tetraethylammonium chloride before operation. The solid black columns represent the mean decrease in diastolic pressure following administration of tetraethylammonium chloride one year after operation.

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vation of this area neither lowered the pressure nor significantly affected the response to a generalized decrease in sympathetic tone.

EFFECT OF TETRAETHYLAMMONIUM CHLORIDE ON HEADACHE

In addition to being of some value in the rejection of cases in which a good result after splanchnicectomy was less likely there has been a rather remarkable relief of symptoms in some hypertensive patients following injection of the drug. In a number of instances hypertensive patients who entered the hospital with severe headaches, somewhat confused thought and at times blurring of vision had prompt symptomatic relief following the administration of the drug. In some the headache would recur a few hours later, while in others it would not return for many weeks. It is always difficult to evaluate such subjective responses even though in many instances control injections of isotonic

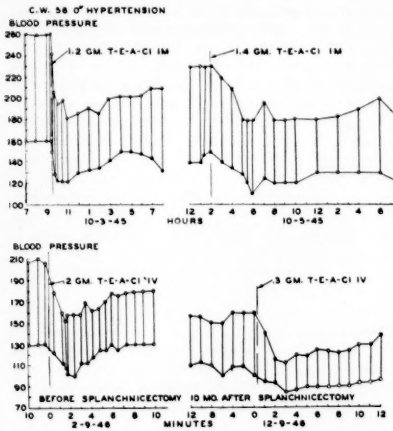

Chart 5.—The response to an intramuscular injection of tetraethylammonium chloride in a 54 year old man with known hypertension (220 systolic and 120 diastolic) for three years. He experienced a recent increase in pressure associated with severe nuchal headaches, vomiting and blurring of vision which were relieved by the first injection. A subsequent intramuscular injection was given for experimental purposes. The intravenous injection indicated that reflex sympathetic tone was important in the maintenance of his elevated pressure, which was decreased by splanchnicectomy. The postoperative response to tetraethylammonium chloride was diminished.

solution of sodium chloride were administered to rule out suggestive relief of symptoms.

In those patients with hypertension and uremia no symptomatic relief was noted, and in general the drug had little effect. In cases of dyspnea associated with uremia and hypertensive heart failure, the administration of the drug generally failed to lower the pressure significantly and only made the patient more uncomfortable because of the presence of postural hypotension. A few patients with heart failure without uremia experienced temporary relief of dyspnea during the depression of the blood pressure.

INTRAMUSCULAR INJECTIONS

When the drug was administered in the muscle in doses between 10 and 20 mg. per kilogram of body weight, the effects were generally less predictable but more prolonged because of different rates of absorption. In some instances there was an abrupt drop in pressure within two and three minutes which would continue for one to five hours (chart 5). At other times no change in pressure occurred in patients who had experienced a considerable decrease after an intravenous dose. In general, the intramuscular injection was associated with moderate local pain at the site of the injection. The other effects of autonomic blockade make the patient rather uncomfortable. Except for the occasional relief of severe symptoms resulting from the hypertension, the patient generally fails to be benefited by a prolonged period of depressed pressure, for as the effects of the drug disappear the pressure returns to its previous level.

Occasionally in hypertensive patients who have had recent elevation of pressure above their usual pressure level, either intravenous or intramuscular injections may decrease the pressure considerably. As the effects of the drug disappear the pressure will return to its usual level rather than to the high level temporarily present (chart 5). Similar changes have frequently been observed to occur spontaneously after one to three days of hospitalization.

THE FUTURE OF SIMILAR DRUGS IN HYPERTENSION

The action of compounds of this type apparently depends on their ability to compete temporarily with acetylcholine at the ganglionic junction of both the parasympathetic and sympathetic nervous systems. Acetylcholine is necessary for the transmission of nerve impulses through those ganglions. It would seem likely, therefore, that other drugs of this type which would be developed would have the same type of action on both the sympathetic and parasympathetic nervous systems if they produce a blockade at the ganglions. Under these circumstances prolongation of the action of the blockade will generally result in discomfort to the patient from the absence of parasympathetic tone on the gastrointestinal tract and salivary glands. The continued postural hypotension from sympathetic ganglionic blockade forces the patient to remain supine. The loss of accommodation is annoying. Methods of prolonging the action of tetraethylammonium chloride have been investigated without success up to the present time. Even if the effects could be more prolonged such drugs would offer no advantages in the daily management of the hypertensive patient. They may have limited usefulness in the evaluation of vasomotor tone and in the symptomatic relief of hypertensive headaches. Tetraethylammonium chloride is, however, a useful pharmacologic tool in the study of the manifestations of the autonomic nervous system.

SUMMARY

The action of tetraethylammonium chloride on the blood pressure of 437 patients has been described.

It is suggested from the mean decreases in blood pressure that an abnormally elevated initial diastolic pressure is maintained with somewhat more reflex vasoconstrictor tone than when the initial diastolic pressure is normal. Decrease in sympathetic tone produced by the drug fails to return the pressure to normal, suggesting that other factors are present in maintaining the elevated pressure.

Failure of the pressure to fall more than 10 per cent of the initial diastolic level was noted in 16 per cent of 228 hypertensive patients. These patients had a

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greater incidence of degenerative changes associated with their hypertension. It is suggested that vasomotor tone did not play an important role in the maintenance of pressure in these cases.

All 27 patients who had some decrease in diastolic pressure one year after splanchnicectomy responded to the drug before operation with a fall in pressure greater than 14 per cent of the initial level. Ten of the 31 patients who failed to have a change in pressure with splanchnicectomy had less than a 10 per cent fall in pressure with the drug. The response to repeated injections of the drug one year after splanchnicectomy was greatly decreased in the patients who had had a fall in pressure with operation and was essentially unchanged in those patients who failed to have a decrease in pressure with operation.

Hypertensive headaches are often relieved by the drug.

Tetraethylammonium chloride has no place in the daily management of hypertension.

ABSTRACT OF DISCUSSION

DR. K. G. KOHLSTAEDT, Indianapolis: Dr. Lyons has noted a decrease in the hypotensive effect of tetraethylammonium in patients in whom the blood pressure was significantly reduced by sympathectomy. A comparable loss of responsiveness to the drug was not observed in persons in whom surgical treatment had failed to alter the level of the arterial pressure. These results suggest that in some but not all hypertensive persons vasoconstrictor tone in the splanchnic area may be a factor in maintaining an elevated arterial pressure in the supine position. However, we must be cautious in drawing conclusions regarding the etiology of hypertension on the basis of the patient's response to any drug. Interpretation of Dr. Lyons' results is complicated because tetraethylammonium affects both the sympathetic and the parasympathetic nervous system. Hypertension is a clinical sign, not a disease entity, and more than one causative agent may be responsible for elevating the arterial pressure in the syndrome which we call essential hypertension. We cannot expect widespread blockade of the autonomic ganglions to produce the same effects as the removal of a portion of the sympathetic nervous system. In my opinion the failure of tetraethylammonium chloride to lower distolic pressure as much as 15 per cent is more significant than any hypotensive effect which the drug may have. In Dr. Lyons' cases, there were 14 in which tetraethylammonium did not lower the diastolic pressure, and in all of these sympathectomy also failed to produce a permanent reduction in arterial pressure. Investigation of the renal hemodynamics by means of iodopyracet-inulin clearance has revealed that in essential hypertension an increase in filtration fraction (the ratio of glomerular filtration-inulin clearance to the effective renal plasma flow-iodopyracet clearance) indicates an advanced stage of the disease. There is a considerable amount of evidence to support the hypothesis that this change in renal hemodynamics is due to the direct action of a pressor substance on the arterioles of the kidney. In patients who did not respond to tetraethylammonium in our group at the Indianapolis City Hospital, there was invariably an elevated filtration fraction. On the other hand, in some with an elevated filtration fraction, tetraethylammonium lowered the diastolic pressure more than 15 per cent, and in all patients with essential hypertension in whom the filtration fraction was normal tetraethylammonium always produced a decrease in diastolic pressure. These findings suggest that failure to respond to tetraethylammonium may denote a type of hypertension in which vasoconstrictor tone may play only a minor role in the production of an elevated arterial pressure.

DR. EUGENE FOLDES, New York: I should like to present some observations with reference to the pathogenesis and therapy of hypertension. A patient with hypertension was under observation for thirteen years. In 1936, diabetes was discovered. Before the discovery of diabetes and probably at the time when hyperglycemia developed, the blood pressure dropped and stayed at normal or moderately increased levels for about one year. Later, when the blood sugar was brought under control, the blood pressure increased again. In another patient, a moderate hypertension developed in the course of years. In 1942, diabetes was discovered. As in the first case, the blood pressure dropped, probably simultaneously with the development of hyperglycemia. In the case of diabetes and hypertension represented in this slide, you can see that when the blood sugar rises, the blood pressure drops, and when the blood sugar drops, the blood pressure increases. Broadly speaking, it can be stated that in the hypertensive diabetic patient there is an inverse relation between the blood sugar and the blood pressure. One possible explanation is that hyperglycemia leads to glycosuria, glycosuria leads to polyuria, polyuria to dehydration, dehydration to reduction of the circulatory blood volume and that to a drop in the blood pressure. The other possible explanation considers the adrenal cortex. It is axiomatic that if in the organism such conditions exist as are promoted by a gland of internal secretion, that gland decreases its function. Therefore, if the blood sugar increases in the hypertensive diabetic patient, the adrenal cortex which tends to raise the blood sugar would seem to decrease its function. If the adrenal cortex decreases its function, sodium chloride is eliminated through the kidneys at an increased rate. That would seem to be followed by a reduction of the circulatory blood volume and by a reduction of the blood pressure. Further investigations are necessary. It will also be necessary to determine whether or not hypertensive diabetic patients will be better off with a comparatively high blood sugar in order to keep their blood pressure comparatively low.

DR. FREDERICK M. ALLEN, New York: Whatever the symptomatic or instructive values of any drugs, they should not distract attention from the fundamental diet treatment. Our papers proposing salt-free diet in 1920 and 1922 gave full credit to the prior French work, but our method was complete before we ever knew of the French work. We originated the following major advances: 1. We corrected the fallacy of "chloridemia" and prohibited not only the chloride but all other salts, such as sodium bicarbonate and baking powder. 2. We introduced the necessary standard of strictness, and although laxity of so-called salt-free diets prevailed long afterward, all recent writers on cardiac, renal and vascular treatments now accept our strict standard. 3. Except for the unknown work of de Snoo, we originated salt-free diet for puerperal eclampsia. 4. We insisted on essential hypertension as a definite disease and not an accidental complex of symptoms. 5. We characterized salt-free diet as a specific means of relieving functional strain and therefore as a solution for the huge mortality problem, by arresting progressiveness in cases of disease properly diagnosed and treated from early stages. These ideas were so advanced that not all are yet accepted, though they are supported by twenty-eight years of experience. In experimental animals, the hypertensive influence of salt was demonstrated first by Verney and Vogt in England, then by myself and lately by Grollman-Harrison, Selye and others.

DR. RICHARD H. LYONS, Ann Arbor, Mich.: Dr. Kohlstaedt's point is well taken, that if we are to use a negative response to tetraethylammonium to contraindicate sympathectomy then great care must be taken to avoid apprehension and to give adequate doses. It has been shown that injection of epinephrine in animals or man would negate the response to tetraethylammonium, and certainly in human beings who are apprehensive there may be no fall in pressure due to an epinephrine response. I do not wish to enter into the polemics of the causes or specific treatment of hypertension. I have merely tried to describe to you the role that vasomotor tone may play in the maintenance of an elevated blood pressure.

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STREPTOMYCIN SENSITIVITY

Development of Sensitivity in Nursing Personnel Through Contact During Administration of the Drug to Patients

SOLOMON M. RAUCHWERGER, M.D.
FREDERICK A. ERSKINE, M.D.
and
WALTER L. NALLS, M.D.
Oteen, N. C.

Although the development of sensitivity to streptomycin is of common occurrence in patients receiving the drug over a period of weeks or months and has been reported many times, we have been unable to find specific reports in the literature concerning the incidence and character of the reaction among personnel concerned with the administration of the drug. In recent protocols issued for administration purposes by the Veterans Administration outlining use of the drug in Veterans Administration hospitals,[1] there is brief mention of 2 cases developing in personnel after prolonged contact. The suggestion was made in these protocols that all nurses be given patch tests to determine sensitivity, apparently with the intent that positive reactors be kept from contact with the drug. Through personal communication [2] it has also been reported that instances of sensitivity to streptomycin have developed among the nursing staff at Western North Carolina Sanatorium. Peck, Siegal and Bergamini [3] stated that 5 per cent of penicillin sensitivity is the result of "autosensitization," occurring in persons who have a dermatomycosis, the fungi present producing penicillin which acts as the antigen. In none of our cases were we able to detect the presence of an actinomycotic infection which might cause similar sensitization to streptomycin.

Fig. 1.—Denuded area on thumb of nurse representing a contact dermatitis following development of sensitivity to streptomycin.

Over a period of twenty months streptomycin was administered to 233 patients in the thousand bed tuberculosis hospital at Oteen, N. C. During this time in 6 nurses a definite sensitivity to the drug developed. In view of the widespread use of the drug, especially in tuberculosis sanatoriums, and in view of the acute shortage of nurses throughout the country and the factors discussed later in this article, we feel that any effort to exclude personnel from contact with the drug poses an extremely difficult problem and is of compelling current interest.

Fig. 2.—Periorbital edema occurring in nurse M. K. G. as part of a generalized reaction following a cutaneous test dose of 100 units of streptomycin.

Sensitivity to streptomycin in all our cases was characterized by an initial erythema followed by pruritus and a papulovesicular eruption. The pruritus constituted a most distressing symptom. In 2 patients there was actual denuding of the skin (fig. 1) over the terminal phalanges of the thumbs and index fingers of both hands. This was considered to be the result of more frequent contact of these areas with the drug in the handling of syringes and needles. Five of the 6 patients showed involvement of the periorbital areas, manifested by a moderate to severe edema of both lids associated with pruritus and photophobia. The conjunctivas were not involved.

Involvement of the periorbital areas was undoubtedly due to autoinoculation. This was exemplified by what many will recognize from personal experience as a not uncommon and somewhat amusing occurrence. One of the nurses while being interviewed unconsciously rubbed her nose and eyes three times, maintaining positively at the same time that she was careful to keep her hands away from her face.

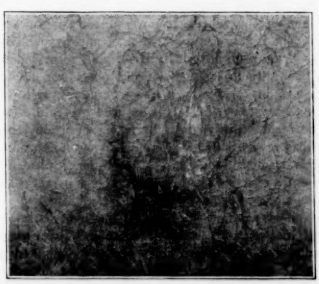

Fig. 3.—Strongly positive cutaneous reaction following intradermal administration of 100 units of streptomycin.

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1. Veterans Administration Technical Bulletin 10-37, Sept. 24, 1947.
2. Bittinger, S. M.: Personal communication to the authors.
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The following case report is representative of the onset and course in all 6 cases.

REPORT OF CASE

Nurse M. K. G. had been on a ward where she administered streptomycin daily over a period of eighteen months, when she first noted the characteristic appearance of erythematous areas over the dorsal aspects of several fingers of both hands. This eruption was quickly followed by severe pruritus of the involved areas. Within the next few days she began to show puffiness of her eyes, also accompanied by itching. Because of the recent acquisition of bifocal lenses, this nurse ascribed her eye symptoms to the use of her new glasses. However, from the lesions on her hands, together with a history of contact, and in the light of our recent experience with this entity, we felt that this was a case of streptomycin sensitivity. An intradermal test with 100 units of streptomycin in 0.1 cc. of isotonic solution of sodium chloride was done. This test dose was followed by a severe response. Within twelve hours the periorbital edema noted in figure 2 developed, and the patient experienced a pronounced photophobia. She also had a 4 plus local reaction (fig. 3) measuring 20 by 35 mm., and a flare-up of the lesions on her hands. Her urine was essentially normal but her blood count revealed eosinophilia (19 per cent). She was placed on diphenhydramine hydrochloride ("benadryl"), 50 mg. four times daily for three days, with little or no response. "Pyribenzamine hydrochloride" (tripelennamine hydrochloride) was then administered, 50 mg. four times daily, with definite relief of symptoms within twelve hours. She returned to duty within two weeks after the original onset. This greater efficacy of "pyribenzamine" as compared with "benadryl" medication was uniform in the 3 of our cases in which it was employed for relief of symptoms.

Since these lesions simulated dermatophytoses in some respects, smears and cultures were made from scrapings of the lesions. Smears were negative and cultures showed no growth on blood agar and Sabouraud's mediums after five weeks.

Since these nurses in all instances were in intermittent contact with the administration of streptomycin for periods varying from eight to eighteen months, and manifested sensitivity to the drug only during the past three months, it is probably safe to assume that this type of reaction will develop only after a prolonged period of contact with the drug—i. e., after several months. However, the possibility that sensitivity will develop in the absence of signs and symptoms thereof is thought to be of considerable importance, inasmuch as these persons may be considered potentially subject to an outbreak of dermatitis. Conceivably, this might well occur, with continued exposure tending to augment the sensitivity already present. Furthermore, it is an obvious possibility that many of these persons may some day require the drug and be unable to be benefited because of this acquired sensitivity.

These factors constitute a definite occupational hazard for nurses, pharmacists, laboratory technicians or any one concerned with the administration or handling of the drug. As a consequence, it was considered worth while to do cutaneous tests for the entire nursing staff, the laboratory technicians and pharmacists at this hospital with the intention of instituting a program of desensitization for positive reactors.

The following method was used in the cutaneous tests. A group of 24 persons consisting of physicians and clerical workers was used as a control series. None of these persons had had any actual contact with streptomycin. This group was subdivided into four equal lesser groups and 10, 25, 50 and 100 units of streptomycin per 0.10 cc. of isotonic solution of sodium chloride was administered intradermally to each of these groups, respectively. There were no positive reactors among the controls. One hundred units of streptomycin was administered intradermally to 97 members of the nursing staff. Seven persons (7.2 per cent) gave definitely positive reactions in twenty-four hours. There were doubtful positive reactions in 6 persons (6.2 per cent) in twenty-four hours. Patch tests done on 3 nurses resulted in two positive reactions in twenty-four hours. The patch test done on the third nurse elicited no reaction for three days, during which time she was receiving "pyribenzamine," 50 mg. every four hours, for severe pruritus accompanying her dermatitis. Three days after cessation of "pyribenzamine" medication, this nurse's patch test elicited a strongly positive reaction, indicating a probable inhibition of the cutaneous test by the antihistaminic drug. It is felt that the patch test gives inconstant results because of the difficulty of regulating the concentration. For this reason the intradermal test was adopted. By this method, cutaneous tests will be repeated every four months in an attempt to detect early cases of sensitivity.

As prophylaxis against the development of any further sensitization in like manner, the practice has been established of wearing rubber gloves, with hand washing before and after the handling of streptomycin and of the syringes and needles used in its administration. During the search for possible contaminating practices, it occurred to us that over a period of months "inadvertent nebulization" during sterilization of needles and syringes might well be etiologically significant. Therefore, it is now the practice to allow all sterilizers to cool before opening, in order that there will be no exposure to any emanating steam. A better plan, if feasible, would be to centralize the sterilization of syringes and needles. To date, this plan has not been considered suitable for adoption at this institution.

Protective creams such as those used against flash burns in the armed services might be given a trial, but are not thought to offer the best protection and have not been used at our hospital.

It is strongly urged on the basis of these findings that intradermal testing be performed as outlined in institutions where streptomycin is used at all extensively, and that the prophylactic measures outlined be put to use. With the ever expanding number of antibiotics employed in modern therapy, the reminder that a high index of suspicion be maintained with respect to development of sensitivity to these agents is considered timely.

Allorhythmias.—Two beats following each other within a short time and separated from the next identical group by a longer diastole are classified among the allorhythmias which are called bigeminy or coupled beats. This term, coined prior to the electrocardiographic era, includes, however, at least three different disturbances. First, the succession of groups in which each beat of the basic rhythm is followed by a premature contraction; in this instance, the term bigeminy as a synonym for coupled rhythm is generally accepted. A second form includes examples of an allorhythmia which was later recognized with the aid of the electrocardiograph as due to an auriculoventricular block; a 3.2 block, for instance. The third disturbance is a rare condition which Wenckebach named "true bigeminy." In this type, both beats of each group look alike in the electrocardiogram, for they originate in the same focus.—Scherf, David, M.D. (New York) and Romano, F. J., M.D. (Buenos Aires, Argentina) Extrasystoles in Groups, *American Heart Journal*, page 81, January 1948.

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THE HEMORRHAGIC TENDENCY IN CONGESTIVE SPLENOMEGALY (BANTI'S SYNDROME)

Its Mechanism and Management

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This paper is an exposition of some concepts of the mechanism of the hemorrhagic disorder encountered in Banti's syndrome (congestive splenomegaly, portal hypertension), of means for the recognition of its manifestations and of methods found useful in the control or amelioration of the tendency to bleed. The discussion that follows rests on observations made on 22 patients for whom a diagnosis of Banti's syndrome seemed indicated and who had had bleeding in one form or another. In 9 of the patients evidence of cirrhosis was obtained clinically, at operation or at necropsy. From the histories, it was probable that splenomegaly had preceded the manifestations of cirrhosis. Hematemesis or melena was the form of bleeding in 17 patients. Epistaxis, hematuria, vaginal bleeding, purpura and hemothorax were some of the other forms. The incidence of hemorrhagic complications in patients with this syndrome is difficult to estimate. Except for a brief mention of epistaxis, Banti said little about bleeding in his original article.[1] He seemed to attribute the anemia to the effect of endogenous toxic substances elaborated by the spleen. In Barg and Dulin's [2] series of 43 patients, 39 per cent had hematemesis and 25 per cent epistaxis. Of the 21 patients reported by Rousselot [3] to have died after splenectomy, 8 (38 per cent) had had hemorrhage. Bleeding (epistaxis, melena, purpura) of a slight character, giving rise to no systemic symptoms, is probably common in patients with this syndrome, but it is often overlooked. In many patients this symptom overshadows all others and forces consideration of measures for its control.

Clinical Recognition.—The syndrome has clinical features common to several diseases. Congestive splenomegaly must be differentiated from the various types of splenomegaly, with or without anemia, leukopenia and thrombopenia, and a number of conditions giving rise to gastrointestinal hemorrhage. When the syndrome is fully developed or when it has followed portal cirrhosis, there is usually little difficulty in recognizing it. In the early phase, it is nearly always confused with other hemorrhage-producing lesions of the gastrointestinal tract. Pain and digestive disturbances are seldom complaints. A sense of heaviness in the upper part of the abdomen after eating may be the only complaint at first. An examination of the abdomen immediately after a severe hemorrhage, and for a week or so afterward, may not disclose enlargement of the spleen.

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Read before the Section on Internal Medicine at the Ninety-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1947.

The surgical procedures alluded to in the case reports were carried out by or under the direction of Dr. Thomas A. Shallow, the late Dr. George P. Muller, Dr. Louis H. Clerf and Dr. Kenneth Fry, of Jefferson Hospital.

1. Banti, G.: Sperimentale (sez. clin.) **48**: 447, 1894; Beitr. z. path. Anat. u. z. allg. Path. **24**: 21, 1898.
2. Barg, E. H., and Dulin, J. W.: Splenectomy in Treatment of Banti's Syndrome, Arch. Surg. **41**: 91 (July) 1940.
3. Rousselot, L. M.: Bull. New York Acad. Med. **15**: 188, 1939.

Case 1.—A white girl 15 years of age was admitted to Jefferson Medical College Hospital on Oct. 16, 1942, because of a sudden hematemesis. Her hemoglobin content was 4.8 Gm. per hundred cubic centimeters, with 1,090,000 red blood cells, 9,200 leukocytes and a platelet count of 80,000. A special search was made for any mass or enlarged organ in the abdomen. The spleen was not palpable. The patient was given four transfusions, and on October 26 (ten days after the onset of vomiting of blood) the spleen was felt for the first time. At operation, eight days later, the spleen weighed 610 Gm. and was turgid with blood; histologic examination of sections revealed little increase in fibrous tissue.

Case 2.—A white man aged 23 was admitted to Jefferson Medical College Hospital because of faintness, weakness and the passage of tarry stools. His first attack of hematemesis had taken place seven months before, at which time he had required several transfusions. In the interim he had been in good health. Except for pallor, physical examination at the time of admission to the hospital revealed no abnormality. There were normochromic anemia, leukopenia and moderate thrombopenia. Tests of hepatic function and roentgenographic studies of the gastrointestinal tract gave normal results. Ten days after his admission to the hospital the spleen was first clearly felt on deep inspiration.

The fact that during the early stages of the disease the spleen has not yet become fibrotic is probably what allows it to contract after a hemorrhage. Much of the blood lost through the broken varicosities comes from the spleen; this fact also accounts for the reduced volume of the organ after hemorrhage. Once the vascular defect has been repaired and the tension in the portal circuit is again increased, the spleen once more becomes distended with blood. The succession of these changes, namely, the gradual increase in portal hypertension and the sudden decompression by hemorrhage, followed by a repeated rise in portal tension, accounts perhaps for the periodicity of the attacks of gastrointestinal bleeding in patients with this disease. Spread of the varicosities or loss of distensibility of the spleen because of advanced fibrotic changes may be among the factors in the increase in frequency of the attacks as the patient becomes older.

Case 3.—A man aged 35 had his first attack of hematemesis in 1934. He was treated for gastric ulcer and was free from hemorrhage until July 1939, when he vomited blood for about a week. In February 1940, August 1941, August 1942, April 1943 and September 1943, he had similar attacks, each of which required hospitalization and several transfusions. Between these attacks he was in perfect health. About a month before the last attack he was thoroughly examined, and the spleen was then felt about 6 cm. below the costal margin. On the day after the onset of the last hematemesis the erythrocyte count was 1,600,000 per cubic millimeter, and the spleen could not be felt on deep inspiration. One month later it was palpated 4 cm. below the costal margin; it weighed 357 Gm. when removed.

A few other differentiating points are helpful. Persistent leukopenia and thrombopenia, with little or no alteration after a hemorrhage, are characteristic signs. Absence of roentgenographic evidence of gastric or duodenal ulcer and enlargement of the splenic shadow are suggestive. A history of severe trauma to the abdomen two to three years before the first attack of hematemesis is occasionally obtained. (Such a history was given by 2 patients in my series.)

Examination of the sternal marrow may help to eliminate the anemias, leukopenias and thrombopenias due either to hypoplasia of the bone marrow or to leukemic infiltration. In the earliest stages of the syn-

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drome, the bone marrow is hyperplastic, especially the erythropoietic series. If there is thrombopenia, it may be difficult to differentiate the syndrome from "idiopathic" thrombopenic purpura. In the later stages, when there are ascites and severe impairment of hepatic function, the bone marrow may be hypoplastic.

Roentgenologic examination is helpful in the demonstration of varices in the esophagus, which are usually located in its lower portion.[4] Lateral and right oblique views are best, obtained at various stages in the progress of the barium sulfate mixture, with the patient in a horizontal position, or even in the Trendelenburg position, to favor a slow emptying of the esophagus and to accentuate the varicosities. The varices, when not fully developed, will at first appear only as large folds of the mucosa, about the thickness of a pencil, differing from the usual esophageal folds in their tortuosity. If the examination is made only a week or so after a hemorrhage, the veins will probably not stand out, since the hypertension in the portal circuit has been temporarily reduced. In the far advanced case, rounded, ampulla-like, irregularly spaced folds of the mucous membrane may be observed ("pearl necklace" formations, fig. 4).

Endoscopic examination, attended with small risk in the hands of an experienced worker, helps to identify the varicosities and to determine their approximate size. The examination preferably should be conducted a few months after the bleeding has stopped, when there is a greater chance of detecting distended veins.

MECHANISM

Cause of Excessive Bleeding.—The hemorrhagic tendency of this syndrome is due both to local and to systemic causes. All portions of the hemostatic mechanism (vascular, extravascular and intravascular)[5] are usually involved.

1. Vascular defects. The involved vessels are the branches of the portal system, usually those in the esophagus or the rectum (fig. 1). The wall of the vein is stretched, undermined and ruptured. Cicatricial rings distort the lumen of the vessel and lead to dilatations.

2. Extravascular defects. The mucosa overlying the distended veins is thinned and eventually sloughs, leaving a "varicose ulcer," which contributes to the erosion of the wall of the underlying vein.[6] These defects are difficult to visualize gastroscopically or roentgenographically during life. Even at autopsy the veins must be injected in order to disclose the defective areas.[6] As in the case of punctured tire tubes, inflation is necessary to locate the site of the leak.

3. Intravascular defects. The thrombopenia and hypoprothrombinemia of this syndrome hinder the prompt formation of an effective hemostatic plug at points where small ruptures of the veins have occurred. This delay allows the vascular defect to remain unrepaired, and the flow of blood is unchecked until large amounts have been lost. The thrombopenia may result from overactivity of the spleen, both in its effect of hematopoietic depression and through increased destruction of platelets in the enlarged, overdistended organ, which holds large amounts of slow-moving or stagnant blood. The fact that thrombocytosis, with subsequent stabilization of the platelet count near normal levels, follows splenectomy is an indication that the spleen contributes directly to the thrombopenia. The hypoprothrombinemia probably results from transient or permanent impairment of hepatic function. In the early stages of the syndrome, the administration of a vitamin K preparation (1 to 2 mg. of menadione sodium bisulfite U.S.P. daily, parenterally) promptly restores the prothrombin level to normal. A slow or no response is a fairly dependable indication of an advanced degree of hepatic insufficiency; delay in or absence of response is usually encountered in the later stages of portal cirrhosis.

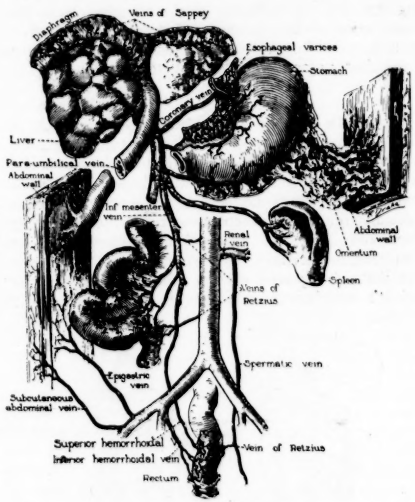

Fig. 1.—The common venous anastomotic channels between the portal circulation and the systemic venous circulation (from McIndoe[6]).

Added to this complex defect in hemostasis is the increased stress placed on the portal vessels by the hypertension within them. It is this hypertension that causes the dilatation of the portal and collateral vessels and leads to distention of the spleen. Congestive splenomegaly and the accompanying changes of Banti's syndrome are now considered to develop as a result of any pathologic process (inflammatory, neoplastic, parasitic or fibrotic) which interferes with the flow of portal blood through the liver or at any point in the splenic or portal vein.[7] In the majority of cases, the obstruction is only partial and has developed gradually. Thrombophlebitis of the splenic or portal veins, portal cirrhosis and cirrhosis due to schistosomiasis are the commonest causes of obstruction. Obstruction in the mesenteric veins leads to formation of varicosities and to intestinal bleeding; but unless the portal or splenic veins become involved by extension, it will not produce

4. Centeno, A. M.: Prensa méd. argent. **32**: 1531, 1945. Schatzki, R.: Roentgen Demonstration of Esophageal Varices, Arch. Surg. **41**: 1084 (Nov.) 1940.
5. Tocantins, L. M.: Ann. Surg. **125**: 292, 1947.
6. McIndoe, A. H.: Vascular Lesions of Portal Cirrhosis, Arch. Path. **5**: 23 (Jan.) 1928.
7. Whipple, A. H.: Ann. Surg. **122**: 449, 1945.

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the syndrome.[3] Except in frank cases of portal cirrhosis, the exact type and location of the obstruction is difficult to determine clinically, and sometimes pathologically. Roentgenographic visualization with injections of radiopaque substances at the time of the operation has been tried.[7] In figure 2 are outlined the changes which follow obstruction in various portions of the portal circulation.

The patient with this syndrome has, then, a multiple defect in hemostatic function (phlebectasia, thinning or ulceration of the overlying esophageal mucosa, thrombopenia and hypoprothrombinemia) and an exaggerated stress on the vessels due to the hypertension within them. The increase in the total blood volume, due principally to an increase in the plasma volume, which is often seen in patients with cirrhosis, may help to augment internal stresses on the vessels. It is the combination of these exaggerated stresses, poorly offset by a defective hemostatic mechanism, that renders the hemorrhages massive and difficult to control.

MANAGEMENT

During the phase of acute bleeding, efforts must, of course, be made to replace the blood lost and to reduce or arrest the bleeding. The reduction in the portal hypertension which follows a hemorrhage may in itself bring about arrest of the bleeding if the patient remains quiet and the speed of replacement and the amount of blood and fluid used are judiciously managed. As with most hemorrhagic disorders, it is well to be content with giving only enough blood to maintain the patient's circulation, without attempting to raise the hemoglobin concentration to normal levels with excessive transfusion. If the patient's hemoglobin level is 7 Gm. per hundred cubic centimeters or thereabouts, and his blood pressure, pulse and circulation are in general well maintained, it is better to let well enough alone. The general condition of the patient, particularly the state of his circulation, is a better indication of the amount of blood to be given and the time of administration than the hemoglobin concentration or the erythrocyte level. Administration of menadione sodium bisulfite U.S.P. 4 mg. daily, hypodermically, should be maintained during the hemorrhagic phase. Arrest of the hemorrhage with local measures is difficult because the bleeding vessels are not easily accessible. If the bleeding continues in spite of these conservative measures, a trial of local compression may be made. A small intestine tube provided with a distensible bag is introduced into the stomach. The bag is inflated, pulled up against the cardia, fixed and held in place for several hours (fig. 3). Liquid food may be instilled through the tube itself, and gastric contents may be aspirated to ascertain when bleeding has stopped.

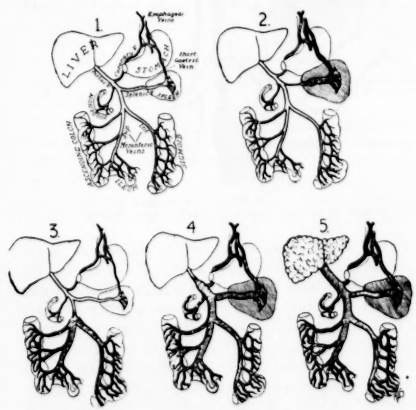

Fig. 2.—Schematic representation of the effects of extrahepatic and intrahepatic obstruction of the portal vein on some of its tributaries. Anatomic variations of the aforementioned pattern (encountered not uncommonly) will, of course, alter the scheme. *1* shows the portal circulation; *2*, obstruction of the splenic vein, splenomegaly and dilatation of the esophageal veins; *3*, obstruction of the mesenteric vein (bleeding with this type of obstruction is chiefly from the small and the large intestine); *4*, obstruction of the portal vein itself, outside the liver, and *5*, intrahepatic portal obstruction due to cirrhosis. The last type calls for the most extensive collateral venous anastomosis, such as is shown in figure 1.

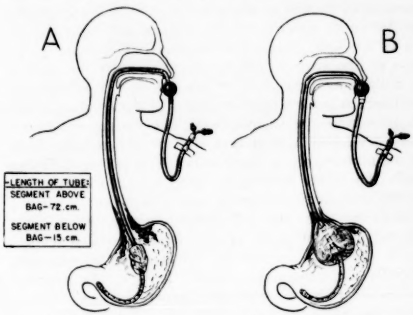

Fig. 3.—Tamponade of the cardiac end of the esophagus, with use of a specially designed tube (assembled by George P. Pilling & Son Co., Philadelphia). This procedure was originally practiced with a Miller-Abbott tube in 1944 by Dr. Edward W. Bixby (also, Rowntree, L. G., and others, Intraesophageal Venous Tamponage: Its Use in a Case of Varical Hemorrhage from the Esophagus, J. A. M. A. **125**: 630 (Nov. 8) 1947). (*A*) The tube with the deflated bag is passed into the stomach. (*B*) The bag is inflated (with 50 to 75 cc. of air) and maintained so. The tube is then drawn up until the bag is pressing against the cardiac end of the stomach. The perforated ball is slipped up against the nostril, and a loop of adhesive tape is passed around the tube just outside the ball, to prevent its slipping down. Aspiration of the gastric contents, after preliminary washing out of the stomach, will indicate whether or not bleeding is still going on. At four to six hour intervals, the bag should be deflated and allowed to remain so for twenty to thirty minutes. This procedure reduces the possibility of development of necrosis of the compressed mucosa. After a period of decompression, aspiration may be tried, to see whether there has been any bleeding. During compression, the patient may be fed through the distal segment of the tube.

CASE 4.—A white man aged 53 was admitted to the Pennsylvania Hospital in May 1945, because of severe hematemesis and melena. He was known to have cirrhosis and esophageal varices. In spite of several transfusions of blood, his erythrocyte count remained under 1,000,000, and he continued to vomit large amounts of blood. Dr. Edward W. Bixby Jr., medical resident in Dr. Garfield Duncan's service, suggested using direct compression on the presumptive bleeding area. He placed a Miller-Abbott tube in the patient's stomach, inflated the bag to a pressure of 20 mm. of mercury and pulled it up against the cardia. The tube was fixed in place, and the position of the bag was checked fluoroscopically. The tube was left undisturbed for about thirty-six hours, during which there was no evidence of bleeding. Meanwhile, it was possible to raise the patient's red cell count to 4,200,000 with subsequent transfusions, without further loss of blood. He left the hospital three weeks later, in good condition.

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As soon as the acute phase of bleeding is over, consideration must be given to measures for its permanent control. These measures are directed toward reduction of the portal hypertension and correction of the phlebectasia, thrombopenia and hypoprothrombinemia. The success of any, or all, of these measures depends chiefly on the character and site of the block in the portal circulation, the degree of functional impairment of associated organs, such as the liver, and the patient's general condition. Patients may be separated into two large groups: 1. Patients under 40, with hematemesis, anemia, leukopenia and thrombopenia; slight or no splenic enlargement during the hemorrhagic period, and moderate enlargement between attacks. The bone marrow is hyperplastic, especially the erythropoietic series, and hepatic function is well preserved. 2. Patients over 40, with hematemesis, melena, anemia, leukopenia and thrombopenia; normal or hypoplastic bone marrow; slight hyperbilirubinemia; occasional or permanent ascites; large, noncontractile spleen, and moderate or severe impairment of hepatic function, as indicated by poor elimination of sulfobromophthalein sodium U.S.P. and little or no increase in prothrombin after parenteral injection of a vitamin K preparation.

In patients of the first group there may be an extrahepatic or an intrahepatic block with well preserved hepatic function. The condition in this group is, of course, often responsive to therapeutic measures. In the second group there is almost certainly an intrahepatic block, as well as advanced hepatic derangement; little or no response to treatment may be expected in this group. Between these two groups is a large number of patients with combinations of defects of variable severity. It is by balancing the extent of the disability and the threat to the patient's life from the attacks of bleeding against the degree of impairment of organs such as the liver, bone marrow and the circulatory apparatus that a decision is reached as to the best procedure to follow.

Correction of the portal hypertension is attempted with splenectomy and/or diversion of the portal blood into the systemic circulation by one of several methods (omentopexy or portacaval or splenorenal shunts).

Splenectomy.—The decision for removal of the spleen in patients with Banti's syndrome rests principally on the following reasons:

(1) About 40 per cent of the blood flowing through the portal vein comes from the spleen, to which it is brought, of course, by the splenic artery. Splenectomy will then help reduce the congestion in the portal circuit by diminishing the amount of blood flowing through the liver. Some benefit might be expected, therefore, to occur even in patients in whom block of the portal circuit is intrahepatic and whose hepatic function is preserved to some extent.

2. When the obstruction is in the splenic vein itself, splenectomy is obviously curative, since it carries with it the elimination of the obstructive factor.[7]

3. In most patients, the removal of the spleen is followed by intensified hematopoiesis, with return of the platelet count to normal. One of the defects in the hemostatic mechanism contributing to the hemorrhage is thereby corrected.

It is not as yet possible to select with full confidence the patients who will be benefited by splenectomy. In those patients with the early stages of the disease or in those with a more advanced stage, yet without severe impairment of hepatic function, the results are often good. Hemorrhages from the alimentary tract may disappear entirely; often they are only diminished in frequency and intensity, while occasionally they may be aggravated. The over-all operative mortality is about 25 per cent.[2] About 50 per cent of the operative deaths are due to hemorrhage from the operative site; patients with long-standing Banti's syndrome often have adhesions of the spleen to the abdominal wall which make removal of the spleen difficult and separation of which leaves large raw areas exposed. Mesenteric or portal thrombosis and pulmonary embolism account for most of the remaining postoperative deaths. These complications occur in five to twenty days after the operation, and they can probably be prevented with heparinization. Occasionally ascites is relieved by splenectomy.[2] The duration of life seems to be appreciably prolonged by the operation,[2] principally, perhaps, because of the discontinuance or diminution in severity of the hemorrhages.

In my series of 22 patients, splenectomy was performed in 9. There were 2 deaths, 1 fifteen and the other twenty-one days after operation, both of thromboembolism. The remainder of the patients have, with 1 exception (a patient who died four years after operation), survived seventeen, sixteen, seven, seven, five and four years, respectively. Two of these patients (the ones who survived seventeen and sixteen years) have been free from attacks of hematemesis since the operation. The rest of the patients have had at least one attack of bleeding; in most instances the attacks have not been so severe as before the operation.

It is obviously impossible in many instances to tell the exact site of the obstruction without surgical intervention. Once the abdomen is open, the surgeon must, among other things, investigate the condition of the liver and of the portal bed at the hilus of liver and determine the presence of any collateral circulation and the state of the area about the spleen. If the dilated veins are situated principally in the left half of the abdominal cavity and there is little or no dilatation in the cecal region, it is probable that the splenic vein alone is involved. If, in addition to splenomegaly, the mesenteric veins about the ascending and descending colon are distended, it is almost certain that the portal vein, extrahepatically or intrahepatically, is obstructed; under these conditions, any benefit derived from splenectomy may be traced to the reduction in the volume of blood passing through the portal circuit and the subsequent thrombocytosis. Obstructive factors cannot always be demonstrated, even when effective methods are employed. In as many as 30 per cent of the patients in one series[3] no such factors could be demonstrated.

The difficulties that sometimes attend splenectomy in these patients make it desirable, whenever it is possible and indicated, to perform the operation before the stage of widespread infarction and adhesions of the spleen to the parietal peritoneum, omentum and other organs. If adhesions are extensive, it may be preferable to ligate the splenic artery or to clamp the pedicle before attempting to free the spleen from its attachments, because of the abundant bleeding from the surface of adhesions. The raw surfaces should be peritonealized or covered with strips or films of hemo-

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static absorbable gauze ("gelfoam") and an oxidized cellulose. Autopsy has sometimes disclosed hemorrhage in and about the splenic bed, even though the pedicles were well tied.[8] The blood probably came from the raw, granulating adhesions, which, perhaps, bled little during the operation itself.

Extension or development of thrombosis in other sections of the portal system would seem a more likely complication of splenectomy for this syndrome than for other disorders. The already existing involvement of the veins in the portal circuit, together with the changes in the blood after operation, probably accounts for the high incidence of thrombosis (particularly mesenteric) after splenectomy for Banti's syndrome. Heparinization and early active mobilization should aid in preventing complications. These measures are especially indicated with those patients who have had a striking rise in the platelet count a day or two after the operation (fig. 4).

Hematemesis or melena appearing in the second week after the operation is a bad omen. It nearly always means that the obstruction has not been relieved and that there has been extension of the thrombotic process into most of the branches of the portal vein previously unobstructed.

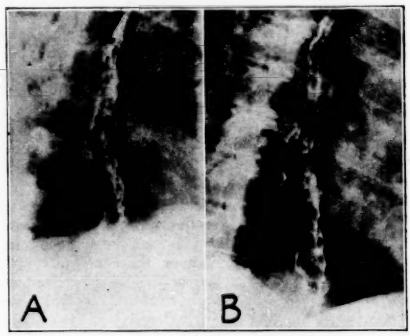

Fig. 4.—*A*, preoperative esophagogram of O. C., a white man 33 years of age, who had four severe attacks of hematemesis in two years, epistaxis and purpura, with platelet counts under 40,000 per cubic millimeter. There was no clinical or operative evidence of cirrhosis. Heparinization was continued for ten days after splenectomy. The patient was living four years after the procedure, with only one attack of hematemesis. He had required no transfusion since the splenectomy. *B*, appearance of esophagogram four years after splenectomy. The platelet count was 320,000 per cubic millimeter; results of other studies of hemostatic function were normal.

Other measures have been tried, usually in association with splenectomy, to relieve the portal hypertension. Omentopexy, either by placing the omentum in contact with an abrased surface of the liver or by suturing the omentum against the split rectus muscle, has not produced uniformly beneficial results.[7] The latest attempts at diversion of the portal flow into the systemic circulation have consisted in anastomosing the portal vein with the vena cava, end to side, using the nonsuture technic with "vitallium" (a cobalt, chromium, molybdenum alloy) tubes.[9] Another variant, anastomosis of the splenic vein with the stump of the left renal vein (after splenectomy and removal of the left kidney) does not seem so effective[9] and involves greater trauma and, probably, a higher risk. The technic of anastomosis of these vessels is exacting and requires a high grade of skill. Results so far reported[10] are encouraging enough to warrant the continued trial of these surgical procedures in critically selected patients.

Correction of the Vascular Defect.—The varicosities themselves are best managed by injecting into them a sclerosing solution through the esophagoscope.[11] It would seem, however, that this procedure should be used in patients who have had splenectomy and who continue to have attacks of hematemesis. Like ligation of the coronorary vein, sclerosis of the natural anastomotic paths,[12] without simultaneous diminution of the blood draining into them, will tend to increase the tension in an already overburdened portal circuit. Some of the patients in my series have been treated with this method by Dr. Louis H. Clerf,[13] who expressed the belief that the method has some value. "In a number of patients whom I have treated over a period of several years there is unquestioned evidence that either the bleeding has been entirely inhibited or the hemorrhages have been minimal. Patients who previously had two or three disabling hemorrhages annually have gone for long periods without even slight bleeding. It is, of course, necessary to reexamine patients several times annually, for the vessels do recanalize and additional injections are required."

Correction of the Defects in the Blood.—One of the defects, thrombopenia, is often corrected by splenectomy. Patients whose platelet count is normal before splenectomy but who have had severe attacks of hematemesis cannot expect much amelioration of the bleeding after the operation; the hemostatic defect was perhaps principally vascular in origin and was apparently inadequately compensated, even when the coagulability and the platelet content of the blood were normal.

The hypoprothrombinemia can be overcome in those patients whose hepatic function is not too far deranged by means of the use of vitamin K preparations and a dietetic regimen designed to enhance hepatic function. These measures, of course, should be a part of the preparation for any of the operative procedures mentioned previously.

SUMMARY

Defects in nearly all portions of the hemostatic mechanism are responsible for the tendency to bleeding in patients with Banti's syndrome.

The defects are thinning and dilatation of the veins serving as tributaries of the portal vein and anastomotic collaterals, ulceration of the gastroesophageal mucosa overlying the veins, thrombopenia and hypoprothrombinemia. Hypertension in the portal circulation increases the already existing stresses on the defective vessels.

Transfusion, administration of a vitamin K preparation and, possibly, tamponade with inflatable bags are

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10. Whipple,[7] Blakemore.[8]
11. Crafford, C., and Frenkner, P.: Acta oto-laryng. **27**: 442, 1939. Walters, W.; Moersch, H. S., and McKinnon, D. A.: Bleeding Esophageal Varices, Arch. Surg. **41**: 1101 (Nov.) 1940.
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13. Clerf, L. H.: Personal communication to the author.

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measures for the arrest of bleeding from esophageal varices during the acute phase.

Splenectomy, injection of sclerosing solutions into the distended vessels, diversion of the portal blood flow into the systemic circulation by anastomotic operations, and measures designed to support hepatic function have been used to control or to diminish the attacks of hemorrhage.

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ABSTRACT OF DISCUSSION

DR. WILLIAM DAMESHEK, Boston: Conditions characterized by splenomegaly, and associated with anemia, leukopenia, granulocytopenia, thrombopenia or pancytopenia, may be due to numerous causes, including congestive splenomegaly. For instance, chronic infectious splenomegaly due to tuberculosis, typhoid and malaria, or to Gaucher's disease and a host of other conditions, are associated with various types of cytopenias. It has been the custom indiscriminately to call all these conditions Banti's syndrome. Much is lost in so doing from the standpoint of exact diagnosis. To be sure, if the patient has hematemesis, there is the likelihood that esophageal blood vessels are grossly enlarged and that the splenomegaly is "congestive" in type. There is a syndrome in children which was first fully described by Richard Smith and his co-workers at the Children's Hospital in Boston, in which thrombosis of the splenic vein occurs in association with hemorrhage, not from esophageal varices, but from the vasa brevia of the stomach. After hemorrhage in children who have this condition, the spleen may not be palpable, as Dr. Tocantins pointed out; but, instead of the common posthemorrhagic leukocytosis, there is leukopenia. Thus, in the presence of hematemesis with leukopenia, one should think of the possibility either of this particular syndrome or of the broader syndrome of congestive splenomegaly. Dr. Tocantins has analyzed the hemorrhagic tendency in this disorder. Ordinarily, one thinks simply of the great distention of the collateral blood vessels as the cause of the bleeding, but he has pointed out that the platelets are usually definitely reduced. I believe this reduction of platelets is due to a hypersplenic effect. The spleen, when enlarged, seems to have an effect on the marrow, reducing the production of the platelets from the megakaryocytes. A variety in choice of treatments of congestive splenomegaly with hematemesis is available; for example, one may use no treatment except, perhaps, transfusion, merely tiding the patient over this one particular hematemesis. Curiously, some patients remain free from episodes of bleeding for many years without further treatment. Or one may choose splenectomy. I think splenectomy should be chosen in cases in which pronounced hypersplenic effects, i. e., extreme thrombopenia or leukopenia, are observed. In such cases, removal of the spleen often relieves the hematologic abnormality. In severe cases with recurrent hematemeses, one should seriously consider one of the shunt operations, of which there are two: the splenorenal shunt, as developed by Blakemore and his collaborators, and the portal vein–vena cava anastomosis. This operation is newer and perhaps more difficult technically; but it offers a better possibility of diminishing the great degree of portal hypertension.

DR. CECIL O. PATTERSON, Dallas, Texas: We are indebted to Dr. Tocantins for his presentation of a most timely subject. It should be emphasized that in cases of Banti's syndrome, although hemorrhage is periodic, one cannot anticipate which recurrence will be fatal. Of 24 patients whom my colleagues and I treated for hematemesis from esophageal varices, only 1 proved to have gastric varices. In 9 patients varices were confined to the lower third of the esophagus, and in 9, to the lower half; in 8, varices extended throughout the esophagus. Thus, I feel that further emphasis should be placed on the sclerosing therapy of these varices with injections through the esophagoscope. I have, during the past three and one-half years, given sodium morrhuate injection U. S. P. (5 per cent) to 24 patients, 3 to 66 years of age, whose chief presenting complaint was that of massive hematemesis, which proved to be from esophageal varices. Caution is, of course, necessary; for example, anaphylactic reactions to the injectable sclerosing agent have been reported. The esophagus lies directly against the pericardium, the aorta and other vital structures, to which trauma must be avoided. Such hazards are remarkably rare as compared with the known high incidence of fatal hemorrhage when the varices are untreated. Three patients with cirrhosis of the liver were relieved of ascites, with restoration of blood and protein reserves, after injection of sclerosing fluids. No apparent complications, such as hemorrhage or aggravation of ascites, have appeared subsequent to the injections per se. Preferably, after splenectomy, or if necessary before, injection of the varices should also be done, if hematemesis is to be prevented. Four of our patients (ages 6, 19, 13 and 34) had had eighty-one massive hemorrhages after splenectomy, whereas, now three and one-half, three, one, and one year, respectively, since the beginning of sclerosing therapy, an anticipated incidence of hemorrhage of twenty-seven was reduced to two, neither of which was fatal. Dr. Herman J. Moersch (*Proc. Staff Meet., Mayo Clinic* **21**:410 [Oct. 30] 1946) reported on 12 patients, with no recurrence of hemorrhage three to seven years after completion of sclerosing treatment of the esophageal varices. To my knowledge, no other method has been proposed which can so effectively protect these patients from recurrence of hematemesis. In mentioning sclerosing therapy of the esophageal varix, there is no intention of minimizing the over-all care of patients with Banti's syndrome, so capably discussed by Dr. Tocantins.

DR. C. J. WATSON, Minneapolis: Dr. Tocantins, how frequently in your series was actual ulceration of the esophageal varices encountered? Do you think this ulceration is related to peptic digestion with the gastric juice? In my experience, ulceration has been encountered infrequently. Often, in fact, it is difficult to find the point from which the bleeding occurs, and if one does find it, the lesion consists only of a small linear slit, a true ulcer being unusual.

DR. LEANDRO M. TOCANTINS, Philadelphia: With reference to Dr. Dameshek's objection to use of the term "Banti's syndrome," I agree with him in part, but it seems to me, after consideration of all the factors, that the term still has its uses as a purely clinical designation. The diagnosis of Banti's syndrome, as it was stressed during the presentation, is mostly one of exclusion of conditions that resemble it but have a different pathogenesis. A number of entities, as Dr. Dameshek said, include many of the clinical features of this syndrome, but when these conditions are accompanied with overwhelming hemorrhages from the gastrointestinal tract, and particularly with the vascular changes that were mentioned, a clinical diagnosis of Banti's syndrome may be made, provided other things, such as leukemias and the various types of anemia and causes of splenomegaly, are excluded. Dr. Patterson's figures are impressive, and I am assured by Dr. Louis Clerf, the bronchoscopist at Jefferson Medical College Hospital, that he is favorably impressed too, with the use of sclerosing injections for esophageal varices. I should like to emphasize that these injections should follow or accompany splenectomy and should not be undertaken before it, since the vascular sclerosis deprives the patient of some of the natural anastomotic channels he has built up. As to the presence of ulcerations over the varicosities themselves, I recall in my own experience 1 such case, encountered at autopsy. The ulcerations were, of course, detectable, because it is possible at autopsy to visualize the entire stomach and to make a careful search for them, whereas such a search is obviously impossible during life. Dr. McIndoe refers to these ulcerations as a not uncommon occurrence in this disorder. That is all I know of the actual frequency of this complication. Occasionally, one hears of the demonstration of gastric ulcers with roentgenographic methods in patients whose condition is later diagnosed as this syndrome.

Clinical Notes, Suggestions and New Instruments

MEDIASTINOTOMY IN SPONTANEOUS MEDIASTINAL EMPHYSEMA

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and
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Mediastinal emphysema has been recognized as a clinical entity for over one hundred years, but it was not until 1937 that Hamman [1] called attention to the spontaneous occurrence of this condition and the criteria necessary for its diagnosis. Since Hamman's lucid descriptions [2] there have been reports of numerous cases. The majority of these have been self limited and of short duration. On rare occasions the accumulation of air in the mediastinum has been great enough to produce severe and sometimes fatal impairment of the circulatory system. When this occurs, immediate surgical intervention becomes necessary. The purpose of this report is to present a case of acute spontaneous mediastinal emphysema which required mediastinotomy.

PATHOGENESIS

In 1930, Joannides and Tsoulsos,[3] while working with the problem of air embolism, noted the occurrence of mediastinal and interstitial emphysema and correctly speculated that anything producing increased intrapulmonic pressure could cause mediastinal emphysema. Macklin [4] clearly outlined and proved the accepted pathogenesis. The process begins with rupture of an alveolus within the lung and is furthered by air dissecting along perivascular sheaths to the hilus and into the mediastinum. The etiologic factor may be positive pressure anesthesia, the second stage of labor, influenza, bronchopneumonia, bronchial asthma, atelectasis, straining at stool, heavy lifting, trauma to the chest wall, penetrating wounds of the trachea or bronchus, tracheotomy, artificial pneumothorax or foreign bodies in the tracheobronchial tree.[5]

CLINICAL PICTURE

The symptoms of the condition are one or more of the following: Pain in the chest, vague discomfort or sensation of constriction, dyspnea and cyanosis. The pain may be substernal or precordial and may radiate to the back, shoulder or arm, often simulating the pain of angina pectoris. In lesser degrees a vague substernal discomfort or feeling of constriction may occur. It may be aggravated by respiration, motion or changes in position. Dyspnea and cyanosis are usually not pronounced unless the amount of air in the mediastinum is great or unless there is an associated pneumothorax.

The most characteristic feature in physical examination is the finding of a peculiar sound heard over the precordium described as "crackling, bubbling or churning." This sound is synchronous with the heart beat and is known as Hamman's sign. Other important but less diagnostic signs are: obliteration of cardiac dulness, engorged veins of the neck, face and chest, pneumothorax and roentgenographic evidence of air in the mediastinum. Roentgenographically mediastinal emphysema may be demonstrated in the anterior mediastinum, around the pericardium in the middle mediastinum or along the larger bronchi in the posterior mediastinum. A frequent and helpful finding is an associated pneumothorax.

The emphysema may extend to the neck, trunk, arms, face and at times even the lower extremities. Usually the temperature and pulse rate are not elevated. Electrocardiograms, white blood cell counts and sedimentation rates remain normal.

Awareness of this condition and knowledge of the diagnostic criteria as set forth by Hamman will assure the differentiation of this disease from acute pericarditis, angina pectoris, myocardial infarction, pleurisy, spontaneous pneumothorax and the various causes of cardiorespiratory distress in infants. The necessity of accurate differentiation is self evident as one considers the gravity of the latter diseases.

PROGNOSIS AND TREATMENT

The prognosis in uncomplicated spontaneous mediastinal emphysema is good and requires no more than symptomatic treatment for a short period. Only if the pressure in the mediastinum becomes great, do serious complications result. This more often develops in infants and may lead to sudden death.

Increasing dyspnea, cyanosis and venous congestion are signs of cardiorespiratory distress resulting from progressive mediastinal pressure. When this appears, immediate operation is imperative. The first recorded mediastinotomy was performed by Tiegel [6] in 1911. He supplemented his vertical suprasternal incision by aspiration with bell jar suction. Since that time various methods have been used to provide egress for air trapped in the mediastinum. Incisions have been made in the following regions: the first two intercostal spaces, supraclavicular fossae, in the suprasternal notch [7] and below the xiphoid process. In children, needle aspiration has been used instead of opening the thorax.

REPORT OF A CASE

N. C., a white man aged 57, was admitted to the University Hospital complaining of swelling of the neck and face and difficult breathing.

His past history revealed asthmatic attacks for twelve years and an illness, suspected of being tuberculosis, two years before admission. At this time he had fever and loss of weight but repeated roentgenograms of the chest showed nothing indicative of tuberculosis.

Seventeen hours before admission the patient was awakened in the early morning by a severe coughing attack during which he had a sudden, severe, sharp pain in the upper anterior portion of the left side of the chest and dyspnea. The dyspnea was not severe and seemed to be caused by restriction of breathing due to pleuritic pain. Eleven or twelve hours after onset, his neck and face began to swell and breathing become more difficult.

Physical examination on admission revealed a normally developed white man sitting upright in bed in considerable respiratory distress. His face, up to the zygomatic arch, neck, left forearm, both arms, thighs, scrotum, chest and abdomen were ballooned up by subcutaneous emphysema. His skin and mucous membranes were moderately cyanotic. Veins of the neck, face and upper part of the chest were distended but not pulsating. Crepitus was present to the level of the zygomatic arches anteriorly and to the occipital protuberance posteriorly. The conjunctivas and lower lids were slightly puffy. The trachea was deviated to the right. A greater amount of subcutaneous emphysema was seen over the left side of the chest than the right and respiratory excursions of the left side of the chest were limited. The percussion note was hyper-resonant throughout. Breath sounds were distant. Voice sounds were dimin-

From the Departments of Medicine and Surgery, University of Maryland School of Medicine.

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7. Hammond, A. E.: Emergency Cervical Mediastinotomy in Case of Massive Mediastinal and Subcutaneous Emphysema Secondary to Removal of Foreign Body from Bronchus, Ann. Otol., Rhin. & Laryng. **53:** 829-836 (Dec.) 1944.

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ished over the posterior surface of the left side of the chest. Few scattered rhonchi were heard over the right lung. The cardiac impulse was faintly palpable along the right border of the sternum in the fourth interspace. The heart could not be outlined by percussion. Heart sounds were rhythmic and distant. Crackling sounds were heard over the precordium during cardiac systole and diastole. The blood pressure was 120 mm. of mercury systolic and 80 mm. diastolic in both arms. The temperature was 99 F.; pulse rate, 100 per minute, and respiratory rate, 28 per minute. The white blood cell count was 16,650 per cubic millimeter.

A roentgenogram of the chest disclosed decided subcutaneous emphysema, a left pneumothorax, and partial collapse of the upper two thirds of the left lung. The diaphragm was depressed bilaterally. There was a shift of the heart, trachea and mediastinum to the right. A thin layer of mediastinal air was present in the region of the aortic knob.

Two hours after admission, the patient's condition appeared critical. He was anxious and his cyanosis and dyspnea had increased greatly. The subcutaneous emphysema had spread noticeably. Both eyelids were swollen sufficiently to prevent opening, and the skin over the suprasternal notch was rather tense. He was taken to the operating room for mediastinotomy.

With local anesthesia, a linear incision was made in the lower portion of the midline of the neck which extended from the inferior border of the thyroid cartilage to the manubrium sterni. The first layer of deep fascia was incised. In the lower portion of the neck, where this splits to encase the manubrium, an incision was made in the posterior leaf which gave access to the superior mediastinum. At this level air bubbled freely into the incision. Drainage was facilitated by gentle digital separation in both lateral directions and inferiorly into the superior mediastinum for a distance of 1 inch (2.54 cm.). The pretracheal fascia was bulging moderately with trapped air, so it also was incised in the vertical axis below the thyroid isthmus, allowing retained air to escape. The wound was left open, with the raw edges loosely covered with petrolatum gauze, and a light dressing of sterile gauze. Improvement of the dyspnea and cyanosis was immediate. The eyelids were aspirated with a 20 gage needle. On return to the ward the pulse rate had slowed to 84 per minute and respirations to 22 per minute.

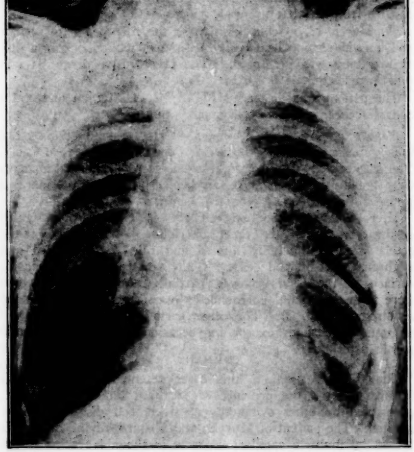

Fig. 1.—Arrow indicates pneumothorax.

After operation, penicillin was given as a preventive measure. The patient was kept in an oxygen tent for eight hours. On the first postoperative day the temperature rose to 100 F. and on the second day to 101 F. On the third postoperative day the penicillin dosage was increased from 30,000 to 50,000 units every three hours. When this proved ineffectual, sulfadiazine was given. The temperature then gradually subsided to normal. The patient's general condition steadily improved, and except for a recurrence of low grade fever convalescence was uneventful. The leukocyte count subsided gradually and three weeks after admission was 6,550 per cubic millimeter. Serial roentgenograms revealed rapid absorption of the pneumothorax, emphysema and the bilateral pleural effusions which developed after admission. The operative wound remained free of evident infection and gradually healed, leaving a normal-sized scar.

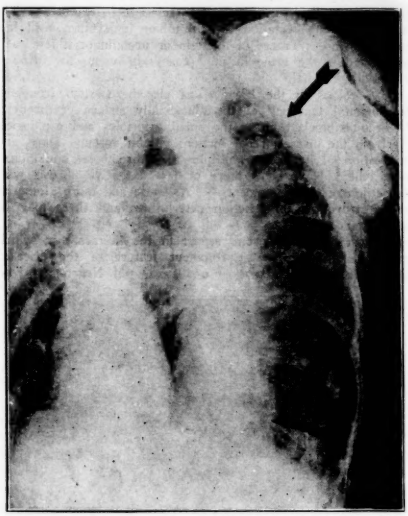

Fig. 2.—Oblique view. Arrows indicate pneumothorax.

COMMENT

This case presents the problem of severe spontaneous mediastinal emphysema with rapidly progressing respiratory and circulatory embarrassment. Pneumothorax causing 30 per cent collapse of the upper two thirds of the left lung was also present but was considered a minimal factor in the symptoms. Mediastinotomy was performed because of the increasing gravity of the patient's condition.

Suprasternal incision, either vertical or horizontal, is the operation of choice. It is our opinion that the vertical incision is more desirable, since it offers less opportunity for wound edges to adhere or for soft tissues to collapse into the wound, thus promoting elimination of air over a longer period of time. Through such an incision blunt dissection of the lateral fascial planes is more easily accomplished. The main disadvantage to a vertical incision is cosmetic, for the resultant scar is larger and is at right angles to the normal lines of skin tension.

SUMMARY

A case of spontaneous mediastinal emphysema requiring mediastinotomy is presented. The clinical picture, diagnosis and management are discussed.

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SICKLE CELL DISEASE WITH SEVERE HEMATURIA SIMULATING RENAL NEOPLASM

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Since Herrick's first reported case,[1] sickle cell disease has become a well described clinical and pathologic entity. The usual renal manifestations are of minor importance until late in the disease. Traces of albumin or urobilin or a few casts are found in the urine in some cases; in others the urine is essentially normal.[2]

The lesions in the kidneys, as elsewhere, stem from the fundamental tendency of the abnormally shaped erythrocytes to become blocked up in the small arterioles and capillaries. Early in the disease, renal sections exhibit vascular stasis and congestion. Later, after multiple small thromboses and infarctions, the kidneys show more or less extensive fibrosis with deposition of blood pigments.[2c] As more and more glomeruli are destroyed, renal function deteriorates and there may be terminal uremia.[3]

We could find only one report in the literature in which gross hematuria was a prominent feature of the disease: Bauer[4] reported the case of a 10 year old Negro girl who

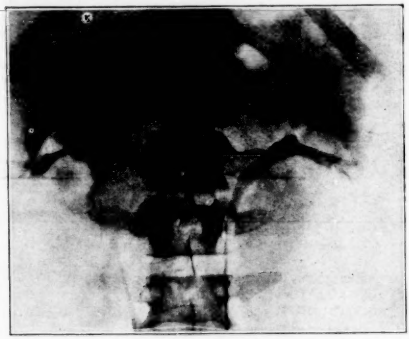

Fig. 1.—Retrograde pyelogram showing filling defect in the left renal pelvis and the upper calyx. This defect was present and unchanged in three pyelograms taken over a period of five weeks.

died of massive necrosis of the renal cortex caused by impaction of sickled cells in the small renal vessels. A patient of Murphy and Shapiro,[3] who died of renal insufficiency, evidenced definite hematuria on only one occasion. Yater[5] and Diggs[6] have not encountered gross hematuria in their wide experience with sickle cell anemia. A few red cells were occasionally seen in the urine of their patients, apparently associated with acute episodes of nephritis or small infarcts.

We encountered a patient presenting severe hematuria, with deformity of the renal pelvis simulating a pelvic tumor. Nephrectomy was performed.

REPORT OF CASE

W. M., a Negro soldier aged [illegible], was admitted to a United States Army General Hospital Dec. 4, 1942 with chief complaints of sore throat and pain in the chest. The patient had also had sudden gross hematuria in August 1942, unaccompanied by pain, dysuria, nocturia or polyuria. His urine had remained "dark" thereafter. The patient had been a railroad worker prior to entry into service and had had no severe illnesses or operations. No history of use of drugs was elicited.

Physical Examination.—The patient was a well developed, robust Negro with mild pharyngitis and bronchitis. His temperature was 98.2 F. and his blood pressure 130 systolic and 70 diastolic. Neither kidney was palpable. There was no lumbar or costovertebral angle tenderness. There were no other significant findings.

Laboratory Studies.—The blood count showed 4,000,000 red blood cells, 81 per cent hemoglobin and 8,500 white blood cells, with normal differential count. The chemistry of the blood was within normal limits. The Van den Bergh reaction was negative. The icteric index was 4. The urine was grossly bloody and contained many red and white blood cells on twenty-five examinations. After nephrectomy on March 12, 1943, repeated moist sealed drop preparations failed to reveal any sickling of red blood cells.

Roentgen Studies.—Chest, Dec. 5, 1942: The heart and lungs were within normal limits. In a survey roentgenogram of the abdomen on December 24 no radio-opaque calculi were noted. The right kidney was normal in size, shape and position. The left kidney was obscured by gas in the colon. An intravenous pyelogram on Feb. 3, 1943 showed incomplete filling of the middle and upper major calyces on the left. In a retrograde pyelogram on February 24 (fig. 1), the pelvis, calyces and ureter on the right appeared entirely normal. There was a filling defect on the left affecting the upper calyx and the superior portion of the pelvis. In a second retrograde pyelogram, on March 8, the filling defect on the left was seen unchanged from its condition on February 24. The possibility of tumor of the left renal pelvis was considered.

Progress Notes.—On January 15 the patient had a severe, persistent cramplike pain in the left costovertebral angle accompanied by severe hematuria. Cystoscopic examinations on February 24 and March 8 revealed grossly bloody urine coming from the left ureteral orifice.

On March 12, in consideration of the roentgen observations and the persistent hematuria, with and without pain, a left nephrectomy was performed. The preoperative diagnosis was renal neoplasm.

The patient was discharged on April 14 after an uneventful convalescence, completely asymptomatic.

Report on Surgical Specimen.—Gross Examination: The kidney measured 10 by 7 by 6 cm. The capsule stripped easily. The cut surface of the cortex was smooth. No unusual changes were noted other than numerous hemorrhages into the mucosal surface of the pelvis. No neoplasm was seen.

Microscopic Examination: There were numerous sickled erythrocytes in all the renal arterioles. The vessels of the pelvis were considerably dilated and filled with sickled and agglutinated red blood cells. A few vessels near the mucosal surface of the pelvis showed partially necrotic walls which were traversed and surrounded by masses of the sickled erythrocytes (fig. 2). The other parts of the kidney showed no unusual changes except for occasional organized thrombi within arterioles.

COMMENT

The clinical aspects of this case presented several unusual features: First, the presence of localized lumbar pain unaccompanied by other symptoms of sickle cell disease is most unusual. The patient of Murphy and Shapiro,[3] dying of uremia caused by multiple capillary infarcts in the kidneys, presented no signs or symptoms referable to the kidney until late in the disease, and never exhibited the specific lumbar pain and tenderness experienced by our patient. Unfortunately Bauer[4] did not report the clinical aspects of his case with renal necrosis. During several months' observation, our patient never displayed the usual manifestations of sickle cell disease.

The roentgenologic and clinical diagnosis of renal tumor is worthy of note. The filling defect persisted unchanged for at least a month and was presumably caused by a blood clot. In the absence of a history of trauma or a demonstrable cause

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of bleeding, renal pelvic tumor was diagnosed. The intermittent pain was probably caused by detached bits of clot causing transient ureteral obstruction.

Finally, we should like to call attention to the absence of hemolytic crises and anemia in our patient. At no time was there a pronounced anemia, and the mild secondary anemia could be easily explained by the evident hematuria. Urobilin was never demonstrated in the urine.

Our inability to demonstrate the sickling tendency in the peripheral blood despite the presence of large numbers of sickled erythrocytes in the kidney sections is most unusual. The reverse is often true, that sickled cells cannot be demonstrated in tissue section even though evident in samples of the peripheral blood.[7] Wintrobe[8] expressed the opinion that decreased oxygen tension may be the factor that causes both the corpuscular distortion and the hemolytic crises in patients with sickle cell disease. Sickle cells are not regularly found in the circulation of nonanemic patients with sickle cell disease.

Fig. 2.—Section of left kidney near pelvis, reproduced from a high power photomicrograph showing a necrotic vessel with numerous sickled red blood cells within the lumen, in the wall and outside the vessel.

If anoxia is the important factor, we may conjecture that for some obscure cause a purely local decrease in oxygen tension was attained only in the left kidney sufficient to make manifest the latent sickling tendency and bring about the unfortunate sequelae.

SUMMARY

A case history has been presented of a patient with extensive necrosis of the renal pelvis caused by obstruction of renal vessels by sickled red blood cells. There was severe hematuria and lumbar pain and deformity of the renal pelvis. The case was unusual because the findings led to an erroneous diagnosis of renal tumor and because there was no evidence to suggest the diagnosis of sickle cell disease prior to nephrectomy.

241 Central Park West (Dr. Abel).
4418 Waldo Avenue (Dr. Brown).

7. Diggs, L. W., and Ching, R. E.: The Pathology of Sickle Cell Anemia, South. M. J. **27**: 839-844 (Oct.) 1934.
8. Wintrobe, M. M.: Clinical Hematology, ed. 2, Philadelphia, Lea & Febiger, 1946, p. 517.

Council on Physical Medicine

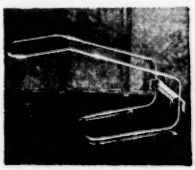
The Council on Physical Medicine has authorized publication of the following reports. HOWARD A. CARTER, *Secretary.*

VALVERDE VASCULATOR (BAKER) ACCEPTABLE

Manufacturer: Valverde Laboratories, 252 Lafayette Street, New York.

The Valverde Vasculator is a device for holding the bedclothes up out of contact with a patient's lower extremities while maintaining a thermostatically controlled degree of warmth in the space or tent so formed. Its essential parts are (1) a strong framework of curved, chromium-plated steel tubing and (2) a pair of long, tubular, incandescent lights controlled by a thermostat.

Three features distinguish this apparatus from the conventional baker or heat cradle. One is the strength and simplicity of its design. The second is the roominess of the space under it, which permits the patient to draw his feet up occasionally by raising his knees and also permits attendants an unobstructed view of either extremity on raising the bedclothes. The third is the thermostatic control, which is generally set at 94 F. (34.5 C.).



Valverde Vasculator.

The investigator for the Council reported the apparatus to be of good workmanship. To turn off the lights it is necessary to pull out the plug. The temperature control and metal guards about the two heating elements greatly reduce the danger of burns to the patient.

The Council on Physical Medicine voted to include the Valverde Vasculator in its list of accepted devices.

DREAM SUNLAMP ACCEPTABLE

Manufacturer: Hytron Radio & Electronics Corporation, 76 Lafayette Street, Salem, Mass.

Distributor: Associated Merchandising Corporation, 1440 Broadway, New York 18.

The Dream Sunlamp is identical with the Hytron Sunlamp Type A and similar in construction to the General Electric and Westinghouse lamps of Type RS. It contains a mercury arc tube and ballast coils. The mercury arc tube contains mercury, a starting coil and electrodes. The ballast coils consist of tungsten filaments which limit the current passing through the mercury arc tube. The ballast coils become heated and then radiate infrared and visible light, while the mercury arc tube radiates ultraviolet. The outer conical glass bulb, or glass container, enclosing the sealed space in which lie the mercury arc tube and ballast coils, is made of a type of glass called "Corning 776," which in proper thickness cuts off sharply the transmission of ultraviolet wavelengths below 2,800 angstroms. The inside of the conical part of the bulb is coated with aluminum to form a reflector.

The statements of the firm regarding the exposure needed to produce erythema have been verified by the Council. For initial applications the recommended exposure is a maximum of four minutes at a distance not less than 61 cm. (24 inches).

The firm states that: "The name 'Dream' is a copyrighted trade mark used in connection with a full line of home appliances."

The Council on Physical Medicine voted to include the Dream Sunlamp distributed by the Associated Merchandising Corporation in its list of accepted devices.

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SATURDAY, FEBRUARY 28, 1948

IS THERE A SHORTAGE OF PHYSICIANS?

The pronouncement by Dr. Thomas Parran, surgeon general of the U. S. Public Health Service,[1] that the country is faced with a shortage of 30,000 to 50,000 physicians by 1960 has recently been reemphasized by the federal security administrator, Mr. Oscar Ewing. Many government officials, as well as the public, have been led to believe that urgent measures are required to prevent a grave shortage of medical care. Alarm is unwarranted and unjustified. Actually the number of physicians is increasing at a relatively more rapid rate than is the general population. Ten years ago the statistics indicated one active physician for every 800 persons in this country; at present there is one physician for every 760 persons; by 1960 there will be one physician for every 700 persons or fewer. More physicians are currently being trained in this country than at any time in our history. All indications point to a still further increase in the number of physicians graduated each year.

During the period 1920 to 1939 the average number of physicians graduated annually in this country was 4,256. For the eight year period 1940 to 1947 when, due to the accelerated program, nine classes were graduated, the average size of the graduating classes was 5,379. Based on the present capacity of the medical schools, the average number of physicians who will be graduated each year for the next twelve years can be conservatively estimated at 5,500; a considerably larger number may actually be anticipated as a result of expansions that are already under way. The annual production of physicians is now approximately 1,250, or about 30 per cent greater than the average annual production during the period 1920 to 1939.

In estimating a shortage of 30,000 physicians by 1960 Dr. Parran made the incorrect assumption that only 111,000 physicians would be graduated during the period 1940 to 1960 and that 77,000 physicians would die or retire during the same years. A strange error was the subtraction of certain physicians twice from the ranks of those active, once when they retired and a second time when they died. After correcting for these errors and the reduced requirements of the government services, the Public Health Service by inference, but not explicitly, revised downward its estimated shortage of physicians from 30,000 to 20,000.[2] A deficit of 20,000 physicians in 1960 would be less than 9 per cent of the total force of physicians who will be active on that date under the current rate of production.

In reaching an anticipated shortage of 55,000 physicians by 1960 the Public Health Service[2] took the twelve states with the highest ratio of physicians to population and calculated the additional number of physicians needed to bring the remaining thirty-six states up to the average of the upper twelve. This exercise in arithmetic makes the doubtful assumption that the twelve states used as a standard do not have more physicians than they actually need to provide their residents with adequate medical care. A significant number of the physicians in the twelve states with the highest ratio of physicians to population hold teaching, research and administrative positions that do not exist and for which there is no need in the other thirty-six states.

Even Dr. Parran's lower estimate of a deficit of 20,000 physicians used as a yardstick concepts of medical service that are not realistic in terms of what the nation now, or in the period under consideration, is likely to demand or support. If the needs for additional physicians in certain categories listed by the Public Health Service were to be met, the need for physicians in other situations would be appreciably lessened. The employment of an additional 13,000 physicians by the federal services, the employment of an additional 5,000 physicians in full time local health departments and new mental and tuberculosis hospitals, and the appointment of an additional 16,000 specialists to the staffs of new general hospitals would probably decrease considerably the need for physicians otherwise required to provide medical service.

Associated with the publicity about the shortage of physicians have been proposals which would force our medical schools to adopt measures that would impair the quality of medical education. Thus the spokesman for the Public Health Service said that the country would need to increase its present output of physicians by 50 per cent or more during the intervening years to meet the deficit anticipated by 1960. Such a move could be accomplished only by a tremendous lowering of the standards of medical education that have been developed for the protection of the public during the past forty years. Medical schools in this country are now accepting the maximum number of students

1. Parran, T.: J. A. M. A. **133**: 1047-1049 (April 12) 1947.

2. Parran, T.: J. A. Am. M. Coll. **23**: 18, 1948.

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that can be trained with the personnel and facilities available.

Facilities for providing a high quality of medical education cannot be developed overnight. Substandard medical schools have now almost completely disappeared from the medical scene in this country; any move that would encourage their reappearance must be condemned. The facilities for medical education in this country are undergoing a definite, well ordered expansion. Four new four year schools have been fully developed during the past few years; two more, the University of Washington and the University of California at Los Angeles, are in the process of development; several of the schools of the basic medical sciences are making definite plans to become four year schools, and the establishment of entirely new schools is under active consideration in a number of states. Such expansions, based on sound planning, will satisfactorily eliminate any actual shortage of physicians that may be imminent.

Advocates of radical proposals which would deteriorate standards of medical education do not hesitate to imply that the American Medical Association for economic reasons limits the production of physicians in this country. This charge is entirely without basis! The Association has never sought to limit the number of properly conducted medical schools in this country. Even if the Association desired to reduce either the schools or the number of students it could not do so. Through the Council on Medical Education and Hospitals, the Association has always placed its support and assistance at the service of any responsible group interested in developing a new medical school. On the infrequent occasions when the Association has made recommendations to any school concerning the size of its enrolment, the recommendation has been based wholly on a concern that the school not attempt to train more students than it could properly handle. No private or official body has the power to control the production of physicians in the United States. An increased production of physicians will require enterprise in establishing medical schools and the provision of sufficient funds to supply a sound educational program.

High standards of medical education are fundamental to good medical care. The standards of medical education in this country have been raised from deplorable mediocrity to the point where they are the best in the world. The Public Health Service is concerned with the health of our nation. How can such an agency support a movement that could result in medical care of inferior quality? Conceivably the statistics and estimates regarding the number of physicians needed are being abused for political purposes, exactly as were the selective service statistics until the clear analyses by Freedman became available. The United States Public Health Service should restudy its figures and its estimates, and if its estimates of any impending deficit of physicians can be reduced, it should inform the public that any shortage that may reasonably be forecast is not critical to the nation's health. Let them tell the people that the medical schools of the United States now produce the best trained physicians to be found anywhere in the world. Far more will be lost than gained if the standards of medical education are sacrificed to an abrupt and unnecessary increase in the output of physicians.

The Public Health Service might well join with other groups that have at least an equal concern for the nation's health in the conduct of a calm, scientific appraisal of the nation's needs for physicians and how these needs may best be met without impairing the quality of medical education and medical care. Such a study could serve as the basis for an effort supported by all concerned with the training and production of physicians to develop a sound and effective program fitted to the actual needs of the country. Such an effort is difficult as long as propagandists continue needlessly to alarm the public and to make medical education the center of disagreeable and wholly unnecessary controversy.

THE SIGNIFICANCE OF URINARY COPROPORPHYRINS

The porphyrins include many complex chemical compounds of fundamental importance in living organisms. Biologic substances that contain porphyrin derivatives include hemoglobin and similar respiratory pigments, the cytochromes, the enzyme catalase and chlorophyll in plants. Porphyrins occur in plant and animal tissues, including those of man. Coproporphyrin [1] was first found in the feces of a now famous case of congenital porphyria, Petry, by Hans Fischer [2] in 1915. Because the porphyrin was present almost entirely in feces, Fischer unfortunately called the substance "coproporphyrin." Subsequently, coproporphyrin was found in the urine in relatively large amounts in certain conditions. For the same reason, Fischer applied the name "uroporphyrin" to a porphyrin found in the urine in his case of congenital porphyria. Later work also demonstrated the presence of this porphyrin in the feces in a variety of conditions. Continuing his work on the porphyrins excreted in congenital porphyria, Fischer finally succeeded in crystallizing both coproporphyrin and uroporphyrin. Then in a series of brilliant chemical studies, for which Fischer was awarded the Nobel Prize in 1930, he demonstrated that these two porphyrins differed in chemical structure from those found in the urine and feces of normal subjects. The sub-

1. Watson, C. J., and Larson, E. A.: The Urinary Coproporphyrins in Health and Disease, Physiol. Rev. **27**: 478, 1947.
2. Fischer, H.: Ueber das Kotporphyrin. II. Mitteilung über das Urinporphyrin. Ztschr. f. physiol. Chem. **96**: 148, 1915.

stances were isomers differing only in the positions of two small portions of the molecule. Fischer gave the name type 1 to the porphyrin found in cases of congenital porphyria and type 3 to that found in the normal person. Subsequently, this has been referred to as the "dualism" of the porphyrins.

Studies since Fischer's classic work have verified the presence of coproporphyrin types 1 and 3 (as well as uroporphyrin) in the urine and feces and have established to some extent the amounts and types in a variety of conditions. Later, in normal human subjects, Watson and his co-workers at the University of Minnesota [3] have found that 14 to 99 micrograms of coproporphyrin is excreted in the urine in twenty-four hours, approximately 80 per cent being the type 1 isomer and 20 per cent the type 3. This amount and the ratio of the two types of porphyrins are considerably altered in certain pathologic conditions. In certain diseases of the liver, including hepatitis with jaundice, cirrhosis and mechanical jaundice, the amount of urinary coproporphyrin may be definitely increased. The increase may be a result of impaired excretory hepatic function, since some coproporphyrin is excreted normally in the bile.[3] An increased excretion of coproporphyrin in the urine is also found in chronic alcoholic addicts; in infectious diseases including pneumonia, pulmonary abscess and poliomyelitis; in pellagra, and in poisoning from lead, arsenic or certain drugs including sulfonamide compounds, acetanilid, phenacetin, acetylsalicylic acid, ether, paraldehyde, chloralhydrate and morphine. Inconstant increases in urinary coproporphyrin excretion have been demonstrated in pernicious anemia, aplastic anemia, hemolytic anemia and leukemia. The porphyrin excreted in the urine in increased amounts in the foregoing conditions appears to be type 3. This is particularly true in lead poisoning, in which as much as 8 milligrams of coproporphyrin, predominantly type 3, have been found in twenty-four hour samples of urine.

In addition to the pathologic states mentioned, large increases in urinary coproporphyrin are found in the "porphyrias." As mentioned previously, excessive amounts of type 1 coproporphyrin are found in the urine of cases of congenital (light sensitive) porphyria. In so-called acute intermittent porphyria, which is characterized by abdominal or nervous manifestations, the type 3 isomer appears to predominate. As much as 2,582 micrograms of coproporphyrin has been reported in the urine in twenty-four hours in 1 case of acute porphyria. Even larger amounts of uroporphyrin, as much as 147 mg., have been isolated from daily samples of urine.

An explanation of the increase in urinary coproporphyrin in the foregoing clinical conditions is difficult. In the porphyrias the explanation appears to be that there is some inborn error of metabolism, which results in an increased synthesis and, hence, in urinary excretion of coproporphyrin. In lead poisoning, and perhaps in other toxic conditions, the normal combination of protoporphyrin with iron to form hemoglobin may be blocked [4] by lead; the nonutilized porphyrin is then converted to coproporphyrin and excreted in the urine. In hepatic diseases the explanation of the increased coproporphyrinuria may be, as previously mentioned, an impairment of the hepatic excretory function.

Although there is much information available regarding the amounts and types of coproporphyrin excreted in varying conditions, the mode of formation and exact physiologic role of this substance is poorly understood. The significance of the coproporphyrin found in brain and nervous tissue,[5] for example, is yet to be determined.

3. Watson, C. J.: Concerning the Naturally Occurring Porphyrins. V. Porphyrins of the Feces, J. Clin. Investigation **16**: 383, 1937.

4. Rimington, C.: Compt. rend. d. trav. du lab. Carlsberg, série chim. **22**: 454, 1938.

5. Kluver, H.: On Naturally Occurring Porphyrins in the Central Nervous System, Science **99**: 482, 1944.

BRITISH PHYSICIANS REJECT NATIONALIZED MEDICINE

In a plebiscite conducted by the British Medical Association 86 per cent of British physicians voted against working for the universal free medical service scheme that has been scheduled to take effect on July 5. Of course the scheme is not really free, since every tax payer in England contributes toward its support. If the physicians stand firm in their refusal to work, the British government would have only 3,560 general practitioners and 971 consultants to provide the National Health Service for about 47,000,000 people. In the plebiscite 89.5 per cent of British physicians disapproved the National Health Service Act in its present form. This vote was 40,814 to 4,735. As has already been said, 86 per cent voted against accepting the service, the vote being 24,340 to 4,084. Of these, 84 per cent said that they would conform with the major decision and would not accept service. This vote was 24,066 to 4,495. The ballots were sent to more than 56,000 doctors, and 82 per cent were returned. The British physicians are not striking against the sick; they will care for their patients but will not accept payment from the government.

Now the British Medical Association proposes to present the results of the ballot to its representative body, which will meet at the headquarters of the British Medical Association on March 17. In Great Britain a small group of physicians opposed the combat with the government and one organized group—the Socialist Medical Association—has been giving aid and comfort to the Minister of Health and his satellites by asserting that most general practitioners will eventually be anxious to join the service on account of the generous financial terms that the government has offered.

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The British Medical Association opposes the National Health Service Act as the first and irrevocable step toward a whole time state medical service. In Great Britain, as in this country, the national medical care plan is offered as a health service instead of what it actually is—a system which would eventually bring every physician into government employment. The *British Medical Journal* has inspired British physicians to stand firm in their opposition to such enslavement. In an editorial published January 17 the *British Medical Journal* says:

"Doctors are not business men. They do not form a class whose money comes to them by heredity. They work hard—probably harder and certainly for longer hours than any other section of the community. They are subject to great strain and risk of ill health. The love of their work makes them put up with much that no other group of workers would tolerate. Next to their work what they most prize is freedom—freedom to practice what they are taught and to carve out a career by hard endeavor. In Britain this freedom is secured by the ownership of general practices and by voluntary service in hospitals. This freedom is now being undermined. What medical men most fear is this loss of freedom. By standing firm they can retain it."

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Current Comment

SELECTIVE SERVICE STATISTICS

Before the senatorial committee hearing on proposed health legislation in Washington, D. C., and again at the recent meeting of the National Conference on Rural Health in Chicago, Dr. Maurice H. Friedman discussed the high incidence of medical defects noted in the selective service statistics. In many cases claims as to the need of extension of medical care based on these statistics have been unjustified. A workman falls into a machine and sustains a crushing injury of the arm; good medical and surgical care in this instance preserves his life, even though amputation becomes necessary. This patient eventually appears in selective service statistics as a medical defective. Patients may have perforated ear drums following incision of the drum for otitis media. In the presulfonamide, prepenicillin period, incision of the drum for drainage was good medical care. Cases of rheumatic heart disease, diabetes and thousands of other cases in which good medical care preserved lives of patients who might otherwise have died are reflected eventually in the statistics. Had all these patients been allowed to die, statistics regarding numbers of medical defectives would be considerably improved. In the war years, 1942 to 1945, both infant mortality and maternal mortality rates improved. During this period approximately one third of all physicians in the United States were in military service or otherwise unavailable to the civilian population. Should this be interpreted to mean that there are too many physicians in the United States? Many similar interpretations can be placed superficially on draft statistics. Dr. Friedman warns that thorough study is still necessary before the true interpretations can be placed on the statistics.

PHENYLPYRUVIC OLIGOPHRENIA

In 1934 Fölling [1] reported the discovery of phenylpyruvic acid in the urine of certain feebleminded patients, apparently the result of incomplete metabolism of phenylalanine, an amino acid commonly found in food proteins. Indeed, further studies [2] showed that the output of this abnormal metabolite varied directly with the level of protein in the diet and that the feeding of either of the optical isomers of phenylalanine resulted in an augmented excretion of phenylpyruvic acid. In the same conditions the concentration of phenylalanine itself is increased in the blood and spinal fluid.[3] The incidence of this metabolic error in a large population of feebleminded persons is about 0.5 per cent,[4] and it appears to be hereditary.[5] Blond hair, blue eyes, patchy eczema and rather heavy musculature with increased tone and with tremor are physical characteristics frequently noted in these patients with phenylpyruvic oligophrenia. Deviation from the normal does not occur in the amino acid content of the tissues in this condition.[6] The benzene ring is notably difficult to oxidize in the body, and it frequently has been used experimentally to label compounds whose metabolic fate is being studied. Disease such as tyrosinosis and alkaptonuria are classic examples of errors of metabolism in which the phenyl group in ordinary amino acids is involved. Also, experimentally, aromatic metabolites of phenylalanine can be demonstrated under certain conditions in rats on a thiamine-deficient diet and in guinea pigs when ascorbic acid is lacking in the ration. However, from the available evidence it appears that the metabolic disturbance in phenylpyruvic oligophrenia is distinct from that hitherto induced in experimental animals. Jervis [7] believes that the metabolic defect in these mental patients resides in a failure to attach a hydroxyl group to the benzene ring in phenylalanine, which would take place under normal conditions and thus carry the metabolism through tyrosine and on to carbon dioxide and water. The close correlation between a rather specific chemical deviation and mental abnormality in certain feebleminded patients raises again the hope of demonstrating similar relationships in other types of mental disease. Once this is done, the way may be open to more productive therapy in these situations.

1. Fölling, A.: Ztschr. f. physiol. Chem. **227:** 169, 1934.
2. Penrose, L., and Quastel, J. H.: Biochem. J. **31:** 266, 1937. Jervis, G. A.: J. Biol. Chem. **126:** 305, 1938.
3. Jervis, G. A.; Block, R. J.; Bolling, D., and Kanze, E.: J. Biol. Chem. **134:** 105, 1940.
4. Jervis, G. A.: Arch. Neurol. & Psychiat. **38:** 944, 1937.
5. Penrose, L. S.: Lancet **2:** 192, 1935.
6. Block, R. J.; Jervis, G. A.; Bolling, D., and Webb, M.: J. Biol. Chem. **134:** 567, 1940.
7. Jervis, G. A.: J. Biol. Chem. **169:** 651, 1947.

ORGANIZATION SECTION

Washington Letter

(From a Special Correspondent)

Feb. 26, 1948.

President Truman Announces Appointment of Dr. Scheele

As noted in THE JOURNAL last week, President Truman announced that Dr. Leonard A. Scheele, assistant surgeon general of the U. S. Public Health Service and director of the National Cancer Institute, has been appointed surgeon general. He will succeed Surgeon General Thomas Parran under the policy of the U. S. Public Health Service whereby the surgeon generalship is rotated to maintain high morale in the service. Dr. Parran will continue as this country's representative on the World Health Organization, and he will doubtless officiate to some extent as a representative at large of the service on world health matters. Oscar R. Ewing, federal security administrator, commented that "if you don't rotate the jobs you kill the ambition of men in the service." Appointment of Dr. Scheele conforms with the service's policy of avoiding patronage appointments.

Medical Chief Comments on Retirement Systems

During House Armed Services Subcommittee hearings on the armed forces' retirement pension systems, Rear Admiral Clifford A. Swanson, Navy Surgeon General, stated that the fact that a retired officer was approved for life insurance or was able to earn a good living in private industry would not mean that the Navy was wrong in giving him a disability retirement. He said: "After all, an amputee with good life expectancy is likely to be an excellent insurance risk, and a blind man can make good money as a musician. In both cases the men would not be acceptable for active Navy duty."

Medical Legislation

STATE LEGISLATION

Kentucky

Bills Introduced—H. 232 proposes that no hospital shall, on account of race, **deny any physician the right to practice** in the institution, or deny any student the right to receive hospitalization in the institution or deny any student the right to receive postgraduate or inservice instruction or training in the institution. S. 162 proposes to prohibit the handling, sale and distribution of **barbiturates** except on the written prescription of a practitioner licensed to prescribe and administer barbiturates, with certain stated requirements relating to pharmacists and wholesale dealers in the drug. S. 167 proposes the enactment of a **licensing law for hospitals,** health centers and nursing homes. S. 170 proposes to authorize the board of trustees of the University of Kentucky to **establish a college of medicine and surgery** in connection with the University.

Massachusetts

Bill Introduced.—H. 1748 proposes, on the basis of an initiative petition, to authorize physicians to provide **medical contraceptive care** to married women for the protection of life or health.

Mississippi

Bills Introduced.—H. 351 proposes the enactment of a **workmen's compensation law.** H. 386 proposes the appropriation of $510,000 to the state medical education board for the purpose of carrying out the provisions of the law relating to **medical scholarships and loans.** H. 423 proposes the **creation of a four year medical school** as a department of the University of Mississippi, which shall be operated as a class A medical school in accordance with the Council on Medical Education of the American Medical Association. S. 187 proposes an act to provide for the treatment and/or assistance and diagnosis of **patients having cancer** or suspected of having cancer.

Rhode Island

Bill Introduced.—H. 658 proposes an act to extend and strengthen **the mental health services** in the state and proposes to designate the state department of social welfare as the agency to cooperate with the federal government in this regard.

South Carolina

Bills Introduced.—H. 1104 proposes to authorize the deduction for state income tax purposes of **expenses of hospitalization, medical service** and medicine paid on behalf of the taxpayer or any dependent. H. 1190 proposes a bill to create and maintain **county boards of health,** to prescribe their duties, and so forth.

Coming Medical Meetings

Alabama, Medical Association of the State of, Mobile, April 15-17. Dr. D. L. Cannon, 519 Dexter Ave., Montgomery 4, Secretary.

American Association of Anatomists, Madison, Wis., April 21-23. Dr. Normand L. Hoerr, 2109 Adelbert Road, Cleveland 6, Secretary.

American Association of Industrial Physicians and Surgeons, Boston, March 28-April 4. Dr. Frederick W. Slobe, 28 E. Jackson Blvd., Chicago 4, Secretary.

American Association of Pathologists and Bacteriologists, Philadelphia, Jefferson Medical College, March 12-13. Dr. Howard T. Karsner, 2085 Adelbert Road, Cleveland 6, Secretary.

American Broncho-Esophagological Association, Atlantic City, Chalfonte-Haddon Hall, April 7-8. Dr. Paul H. Holinger, 700 N. Michigan Ave., Chicago 11, Secretary.

American College of Allergists, New York, Hotel Pennsylvania, March 12-14. Dr. Fred W. Wittich, 423 LaSalle Medical Bldg., Minneapolis 2, Secretary.

American College of Physicians, San Francisco, Civic Auditorium, April 19-23. Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Secretary.

American Laryngological Association, Hot Springs, Va., April 14-15. Dr. Louis H. Clerf, 1530 Locust St., Philadelphia 2, Secretary.

American Laryngological, Rhinological and Otological Society, Atlantic City, April 7-9. Dr. C. Stewart Nash, 277 Alexander St., Rochester, N. Y., Secretary.

American Orthopsychiatric Association, New York, Hotel Commodore, April 12-14. Nina Ridenour, Ph.D., 1790 Broadway, Rm. 916, New York 19, Secretary.

American Otological Society, Hot Springs, Va., April 12-13. Dr. Gordon D. Hoople, 713 E. Genesee St., Syracuse 2, N. Y., Secretary.

American Physiological Society, Atlantic City, March 15-19. Dr. Maurice Visscher, University of Minnesota, Minneapolis 14, Secretary.

American Society for Experimental Pathology, Atlantic City, March 15. Dr. Frieda S. Robscheit-Robbins, 260 Criddenden Blvd., Rochester 7, N. Y., Secretary.

American Society for Pharmacology and Experimental Therapeutics, Atlantic City, March 14-19. Dr. Harvey B. Haag, Medical College of Virginia, Richmond 19, Secretary.

American Society of Biological Chemists, Atlantic City, March 14-19. Dr. Otto A. Bessey, Public Health Research Institute, New York 19, Secretary.

Arkansas Medical Society, Little Rock, Robinson Auditorium, April 15-17. Dr. W. R. Brooksher, 602 Garrison Ave., Fort Smith, Secretary.

California Medical Association, San Francisco, April 11-14. Dr. L. Henry Garland, 450 Sutter St., San Francisco 8, Secretary.

Chicago Medical Society Annual Clinical Conference, Chicago, Palmer House, March 2-5. Dr. Willard O. Thompson, 30 N. Michigan Blvd., Chicago 2, Secretary.

Dallas Southern Clinical Society, Dallas, Texas, Hotel Adolphus, March 15-18. Dr. Glenn D. Carlson, 1133 Medical Arts Bldg., Dallas, Secretary.

Federation of American Societies for Experimental Biology, Atlantic City, March 15-19. Dr. William H. Chambers, Medical Division, Army Chemical Center, Maryland, Secretary.

Florida Medical Association, St. Augustine, Ponce de Leon Hotel, April 11-14. Dr. Robert B. McIver, 111 W. Adams St., Jacksonville, Secretary.

Iowa State Medical Society, Des Moines, April 18-21. Dr. John C. Parsons, 406 Sixth Ave., Des Moines 9, Secretary.

Louisiana State Medical Society, Monroe, April 12-14. Dr. P. T. Talbot, 1430 Tulane Ave., New Orleans 13, Secretary.

Michigan Postgraduate Clinical Conference, Detroit, Book-Cadillac Hotel, March 10-12. Dr. H. H. Cummings, 2014 Olds Tower, Lansing 8, Chairman.

Missouri State Medical Association, St. Louis, Hotel Jefferson, March 14-17. Mr. T. R. O'Brien, 634 N. Grand Blvd., St. Louis 3, Exec. Secretary.

New England Dermatological Society, Boston, April 14. Dr. G. Marshall Crawford, 1180 Beacon St., Brookline, Mass., Secretary.

Northern Tri-State Medical Association, Findlay, Ohio, April 13. Dr. Don F. Cameron, 247 W. Berry St., Ft. Wayne, Ind., Secretary.

Ohio State Medical Association, Cincinnati, March 30-April 1. Mr. C. S. Nelson, 79 E. State St., Columbus 15, Secretary.

Oklahoma State Medical Association, Oklahoma City, April 18-22. Mr. Dick Graham, 210 Plaza Court, Oklahoma City, Executive Secretary.

Southeastern Surgical Congress, Hollywood, Fla., Hollywood Beach Hotel, April 5-8. Dr. Benjamin T. Beasley, 45 Edgewood Avenue S. E., Atlanta 3, Ga., Secretary.

Southwest Allergy Forum, Oklahoma City, April 5-6. Dr. Fannie Lou Leney, 1200 N. Walker St., Oklahoma City, Secretary.

Tennessee State Medical Association, Nashville, April 13-14. Dr. W. M. Hardy, 706 Church St., Nashville 3, Secretary.

United States-Mexico Border Public Health Association, Laredo, Texas and Nuevo Laredo, Mexico, March 20-22. Dr. M. F. Haralson, U. S. Court House, El Paso, Texas, Secretary.

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GOVERNMENT SERVICES

ARMY

TOUR OF INSPECTION BY COMMITTEE ON MEDICAL AND HOSPITAL SERVICES

The Committee on Medical and Hospital Services of the Armed Forces, appointed by Secretary of Defense Forrestal, left Washington, D. C., February 16 to visit medical installations in Florida, Texas, Arizona, California, Washington, Colorado, Missouri and Ohio. The committee, with Dr. Paul R. Hawley, formerly chief medical director of the Veterans Administration, as chairman, was instructed to make a thorough, objective and impartial study of the medical services of the Armed Forces, so that the Secretary of Defense may obtain at the earliest possible date "the maximum degree of coordination, efficiency and economy" in their operation.

The official party includes Major Gen. Raymond W. Bliss, surgeon general of the Army; Rear Admiral C. A. Swanson, surgeon general of the Navy; Major Gen. Malcolm C. Grow, the air surgeon, U. S. Air Force, and Rear Admiral Joel T. Boone (MC), U. S. Navy, executive secretary of the committee. The installations visited and to be visited by the committee, and the dates of the visits, are:

February 17—Pensacola, Fla., Navy Flight Surgeon's School, and Houston, Texas, Naval Hospital.
February 18—San Antonio, Texas, Army General Hospital, Air Force Station Hospital and School of Aviation Medicine.
February 19—El Paso, Texas, Army General Hospital, and Tucson, Ariz., Air Station Hospital.
February 20 and 21—San Diego, Calif., Naval Air Station Dispensary, Naval Hospital, and medical facilities of Naval Training Center, Marine Corps Base and Naval Receiving Station.
February 22—Riverside, Calif., (March Field) Air Station Hospital, and Corona, Calif., Naval Hospital.
February 23—Pasadena, Calif., Army General Hospital, and Long Beach, Calif., Naval Hospital.
February 24—Moffett Field, California, Naval Dispensary.
February 24, 25 and 26—San Francisco, Letterman Army General Hospital, Oakland Naval Hospital, Mare Island Naval Hospital, Army and Navy Medical Supply Depots (Oakland and San Francisco), Hamilton Field Air Force Station Hospital.
February 27—McCord Field, Washington, Fort Lewis Army General Hospital, and Seattle, Sands Point Naval Air Station Dispensary.
February 28—Bremerton, Wash., Naval Hospital
March 1—Denver, Lowry Field Air Force Station Hospital, Fitzsimons Army General Hospital
March 2—St. Louis, Army Medical Supply Depot.
March 2 and 3—Dayton, Ohio, Wright Field Air Force Station Hospital, Air Force Aeromedical Laboratory.

Specific problems which Secretary Forrestal asked the committee to study include: (1) improvement in use of existing hospital facilities; (2) coordination of current plans for construction of any new hospital facilities; (3) methods for improving organization, management and administration in operation of hospital and medical programs; (4) coordination or consolidation of medical research and maximum joint use of research facilities; (5) coordination or consolidation of medical training programs; (6) allocation to one service of responsibility for providing all hospitalization and medical care for all services in certain fields of medicine, and (7) development, to the highest practicable degree, of common standards, practices and procedures with respect to physical and mental requirements for entrance into the service and disability discharges, for preventive medicine and for the organization, administration and operation of hospitals.

The committee is to study these problems and to report its observations, conclusions and recommendations to Secretary Forrestal for his consideration and possible action. The committee has no power to order changes. Among those who accompanied the committee on the tour of medical installations are:

Navy.—Rear Admiral Bertram Groesbeck (MC), chief, Aviation Medicine Division, Bureau of Medicine and Surgery. Rear Admiral C. B. Rault (DC), chief, Dental Division, Bureau of Medicine and Surgery. Capt. J. B. Logue (MC), chief, Personnel Division, Bureau of Medicine and Surgery. Capt. Nellie J. Dewitt (NC), director, Navy Nurse Corps. Lieut. Comdr. A. H. Nelson (MSC), administrative assistant to the Surgeon General of the Navy. Lieut. Harry W. Combs (MSC), Enlisted Personnel Branch, Bureau of Medicine and Surgery. Miss Clare R. Murphy, secretary to the Surgeon General.

Army.—Major Gen. T. L. Smith, D. C., chief, Dental Division, Office of the Surgeon General. Col. M. G. Phillips, chief, Army Nurse Corps. Col. P. I. Robinson, M. C., chief, Personnel Division, Office of the Surgeon General. Col. R. E. Duke, M. C., chief, Education and Training Division, Office of the Surgeon General. Major J. F. Doyle, M. S. C., Assistant Executive Officer, Office of the Surgeon General.

Air.—Col. W. H. Powell Jr., M. C., chief, Professional Division, Office of the Air Surgeon. Col. Daniel Ogle, M. C., surgeon, Air University, Montgomery, Ala.

TEST REACTIONS OF SOLDIERS TO HEAT AND COLD

Army Medical Department researchers have undertaken experiments, with the cooperation of the U. S. Air Force, to determine what might happen to the physical and psychologic well-being of soldiers suddenly transported by air from war climates to extreme arctic cold. Thirty-two Air Force soldiers, selected for high physical and mental capacity from a group of volunteers, have been flown from the semitropic climate of McDill Field, Florida, to a subarctic cold area to the far North.

All the men had been stationed at the Florida post for months and were completely adjusted to that climate. Within less than fifteen hours they were set down amid snow and ice in zero temperatures to set up a bivouac.

For several weeks before leaving Florida they were subjected to practically every physical test known to medical science. These tests ranged from basal metabolic and blood pressure measurements to complete blood chemistry. Sulfur content of red cells, vitamin C content of blood cells and plasma, complete urinalyses, concentration of sex and adrenal hormones and their precursors and analysis of body fats were among the determinations.

When the men arrived at their arctic base the tests were again performed. The objective is to discover the biochemical and physiologic changes which accompany day to day acclimatization to cold and the variation of these changes with individuals. The entire field is one in which there are relatively few scientific data. Much has been discovered in tests under simulated conditions, but much remains to be explored as to psychologic reactions and their effects on physical well-being, reactions known medically as psychosomatic.

At their bivouac the men have been divided into three groups. One group will be fed a ration of about 900 calories a day, only half the average human requirement. Another will receive the equivalent of 1,800 calories a day, about what is required in the Florida climate. The third will receive 5,700 calories, consisting mostly of fats and comparable to the diet of Eskimos and others who dwell in the arctic. Presumably those receiving the high caloric ration will adjust best, but the adjustments of those in the other groups are expected to shed light on the importance of diet in acclimatization.

The technical director of this operation is Dr. Robert E. Johnson of the Army Medical Nutrition Laboratory at Chicago. The party is under the command of Lieut. G. E. Gustafson of the same laboratory. Members of the staff and consultants of the Army Surgeon General are participating.

APPOINTMENTS TO MEDICAL SERVICE CORPS

Monroe E. Freeman, Ph.D., research professor of biochemistry, Massachusetts State College, has resigned and joined the medical service corps in the Army as a major.

Elmer F. Chaffee, M.S., bacteriologist, has resigned from the State Department of Public Health of Idaho and joined the medical service corps as a major. Both of these officers served in the Army overseas during the war.

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PUBLIC HEALTH SERVICE

REPORT ON RESULTS OF HILL-BURTON ACT

The U. S. Public Health Service reports that under the Hospital Survey and Construction Act (Hill-Burton Act) as of February 6, one hundred and twenty-four applications for hospital construction have been approved from sixteen states. Of these, one hundred and four are general hospitals, only eleven of which are located in communities of more than ten thousand population. Only forty-one of the hundred and four general hospitals have more than fifty beds. The total cost of approved projects is estimated at about $60,000,000, of which about $18,000,000 will be from federal sources and the remainder from state or local funds.

Forty-nine of the fifty-two states and territories have submitted information indicating their desire to participate in the program. Budgets that provide federal funds to assist in the development of hospital survey and planning have been approved for forty-seven states, while the other five states have not yet requested funds. Forty states have submitted hospital construction plans, thirty-three of which have been approved by the Surgeon General. Legislation authorizing the states to conduct their survey and construction program has been passed or found already sufficient in fifty of the states and territories. Legislation granting authority to license hospitals has been passed or found sufficient in twenty-four states. Eleven states have prior legislation which is sufficient for this program. In six states the legislation appears to be adequate, but the Attorney General will have to issue an opinion supporting that view. In the other eleven states the model legislation was not passed, and it will be necessary for the state to determine that sufficient authority exists or to pass authorizing legislation before minimum standards for maintenance and operation can be issued and enforced. Seven states and one territory—Alabama, Alaska, California, Illinois, Mississippi, New York, North Carolina and Utah—have enacted legislation authorizing allotment of their funds to communities for use in matching federal money for construction.

DECREASE IN TYPHUS IN SOUTHERN STATES

Reported cases of murine typhus decreased 56.4 per cent in two years in nine Southern states, as a result of DDT dusting by state and local health departments, according to preliminary data published in a recent issue of *Public Health Reports*. The Communicable Disease Center of the Public Health Service at Atlanta, Ga., inaugurated the expanded typhus control program in July 1945 by reducing the number of rat ectoparasites. A 10 per cent DDT dust was applied to rat runs, burrows and harborages. Projects were established in the one hundred and twenty-two counties that reported 72.3 per cent of all typhus cases in the nine principal typhus states, or 70.5 per cent of all typhus reported in the United States. In the ten counties with the highest incidence of typhus reported cases dropped from 1,074 in 1944 to 395 in 1946. In all dusted areas reduction of Oriental rat fleas has averaged 84 per cent on the basis of actual flea counts from more than seventeen thousand live rats.

STUDIES ON SCHISTOSOMIASIS

Previously withheld from publication for security reasons, results of research on the blood fluke infection, schistosomiasis, have been released by the U. S. Public Health Service in "Studies on Schistosomiasis," National Institute of Health Bulletin 189. Many of the institute's investigations into this snail-borne disease were conducted at the request of the Surgeon General of the Army. While the disease is not endemic in this country, some military personnel returning from overseas were found to be infected, mostly as a result of exposure in certain islands of the Philippines. Major aspects of the research included: determination of whether domestic snails could serve as intermediate hosts of the three species of human schistosomes and whether treatment of sewage and water could destroy ova and miracidia, and what processes were made effective; development of ointments for chemical impregnation of fabrics against penetration of the larval cercariae, and diagnosis of the disease by serologic and intradermal tests. The two hundred and twelve page bulletin, "Studies on Schistosomiasis," may be purchased through the Superintendent of Documents, Government Printing Office, Washington 25, D. C., at 55 cents a copy.

APPOINTMENTS TO MENTAL HYGIENE DIVISION

The Federal Security Administrator has announced the following appointments to the headquarters staff of the Mental Hygiene Division, U. S. Public Health Service:

Senior Surgeon Seymour D. Vestermark as chief, Training and Standards Section. Dr. Vestermark was formerly executive officer and director of training of the U. S. Public Health Service Hospital, Fort Worth, Texas.

Dr. Jerry W. Carter Jr. as psychologist, Operational Projects Section. Dr. Carter was formerly director of the Wichita Guidance Center, Wichita, Kan.

Dr. Henry D. Sheldon as chief, Institutional Statistics Unit, Statistics and Special Studies Section. Dr. Sheldon was formerly chief of the Institutional Statistics Unit, Bureau of the Census.

The following commissioned officers of the U. S. Public Health Service have been assigned as consultants in mental health to the Public Health Service District Offices:

Surgeon James F. Maddux to District 7, Kansas City, Mo. Surgeon William C. Jenkins Jr. to District 8, Denver. Dr. Maddux and Dr. Jenkins recently took postgraduate training in psychiatry at the Colorado Psychopathic Hospital, Denver.

ANNUAL CENSUS OF MENTAL PATIENTS

The annual census of patients in mental institutions, which has been conducted by the U. S. Bureau of the Census since 1926, has been transferred to the Mental Hygiene Division of the U. S. Public Health Service, as a result of its increased responsibilities under the National Mental Health Act. An Institutional Statistics Unit has been established in the Statistics and Special Studies Section, of which Dr. Charles C. Limburg is acting chief. Dr. Henry D. Sheldon, who has been chief of the Institutional Statistics Unit of the Bureau of the Census, will continue to be chief of the unit on its transfer. In addition to continuing the census of patients in mental hospitals and institutions for epileptics and the mentally defective, plans are now being made to enlarge the census of psychopathic hospitals and psychiatric services in general hospitals and to include a census of mental hygiene clinics operated under federal, state and local government and fraternal and private auspices. Publication of the consolidated annual report, "Patients in Mental Institutions," will be continued by the Public Health Service.

AWARD TO DR. HINGSON

The Junior Chamber of Commerce of the United States has named Dr. R. A. Hingson, surgeon, U. S. Public Health Service, as one of the ten outstanding young men of the nation for 1947 and in ceremonies at Chattanooga, Tenn., January 21, presented to him a gold key as a token of the honor. Dr. Hingson is known especially for his part in developing continuous caudal analgesia for the control of pain in childbirth and in the treatment of eclampsia and peripheral vascular disease. The method has been used in more than half a million deliveries. During the last eight years training classes conducted by Dr. Hingson in the use of this method have been attended by more than 1,500 physicians. At present he is detailed by the Public Health Service to the University of Tennessee College of Medicine, Memphis, where he is codirector of the postgraduate course in anesthesiology and obstetrics. He is a graduate of Emory University School of Medicine, Atlanta, Ga. He has contributed many articles on caudal analgesia to scientific journals and is co-author of a book "Control of Pain in Childbirth." He served during the war in rescue work on a Coast Guard Cutter and in patrol and convoy duty for the Navy.

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PHYSICIANS SEPARATED FROM SERVICE

ARMY MEDICAL CORPS OFFICERS RECOMMENDED FOR/OR RELIEVED FROM ACTIVE DUTY

Indiana

Burks, Jess E.....Gary
Campbell, Sam W.....Indianapolis
Englehart, Otto T. Jr.....Indianapolis
Humphrey, Paul E.....Indianapolis
Mauzy, Merritt C.....Indianapolis
Sacks, Harry J.....Indianapolis
Singer, Ralph C.....Indianapolis
Smith, Richard B.....Fort Wayne
Walker, Adolph P.....Mishawaka
Wolfe, Nelson A.....New Albany

Iowa

Bailey, Robert O.....Parkersburg
Bloemendaal, Edwin J. G.....Orange City
Heise, Harris B.....Manson
Hicks, Edgar O.....Iowa City
Ingle, Newell G.....Emmetsburg
Saunders, William H.....Council Bluffs
Troxell, Millard A.....Hawarden
Yu, Poe-Eng.....Fort Des Moines

Kansas

Schulz, Millard E.....Lawrence
Waraich, Gurbakhash S.....Topeka
Zimmerman, Leon W.....Liberal

Kentucky

Gard, Paul D. Jr.....Louisville
Kaplan, Sherman R.....Providence
Wilson, Roy G.....Smithland

Louisiana

Blamphin, Arthur Z.....New Orleans
Forestiere, Angelo J. Jr.....New Orleans
Izen, Joe A.....Monroe
Lawrence, Thomas J.....Mansfield
Levin, Irving A.....New Orleans
Pou, Frederick A.....New Orleans

Mississippi

Dent, John H.....Vicksburg
Fowler, Richard E. L.....Marion
Hamilton, Longstreet C.....Jackson
Lamb, Roland D.....Columbus
Rogers, George W.....Gulfport

North Carolina

Baker, Horace M. Jr.....Lumberton
Highsmith, Charles J.....Dunn
Jordan, George L. Jr.....Kinston
Sprinkle, Lawrence T.....Weaverville
Verner, Hugh D.....Forest City
Wilkerson, Joseph L.....Greenville
Williams, Thomas R. Jr.....Hickory

North Dakota

Scea, Wallace A.....Dickey

Ohio

Biedel, Clark W.....Marietta
Frell, Thomas C.....Warren
Gradolph, Paul L.....Hamilton
Greenwald, Arthur F.....Cincinnati
Hendershot, Jack G. G.....Canton
Hudack, Edward D.....Cleveland
Kasserman, Walter H.....Hannibal
Kowallek, Paul J. Jr.....East Cleveland
Levine, Earl J.....Columbus
Pack, George T.....Columbus
Reed, Joseph O. Jr.....Findlay
Reisenfeld, Allen J.....Cleveland
Rice, Franklyn A.....Cleveland
Rowen, Manuel J.....Cleveland
Scheer, David K.....Toledo
Schlecht, Fred G.....Girard

Ohio—Continued

Slatmyer, Karel R. Jr.....Elyria
Smith, George A.....Springfield
Spear, Richard C.....Newcomerstown
Swaney, Byron E.....Cincinnati
Townley, Charles O.....Columbus
Urban, Donald A.....Zanesville
Varney, Dean C.....Columbus
Weihl, Carl.....Cincinnati

Oklahoma

Cawley, Francis P.....Fairview
Demas, Ross P.....Ponca City
First, Safety R.....Tulsa
Fullenwider, Charles G.....Muskogee
Simon, Floyd.....Clinton
Snoody, William T.....Norman
Tagge, James F.....Enid

Pennsylvania

Aye, John T.....Ambridge
Breckenridge, Robert L.....Washington
Chomko, Martin.....Scranton
Cleland, William D. Jr.....New Castle
Dove, Frederick D. Jr.....Philadelphia
Duncan, James R. Jr.....Jannette
Eckroth, Richard N.....Elizabethtown
Edmonston, George F. Jr.....Pittsburgh
Eisenberg, Morton S.....Harrisburg
Evashwick, George.....Turtle Creek
Eyler, Joseph A.....Bedford
Gilday, Frank J. Jr.....Scranton
Gwinn, Benjamin C.....Mansfield
Haislip, Donald B.....Dormont
Healey, Joseph T.....Wilkes Barre
Hickes, John M.....Glassport
Janis, Leonard J.....Pittsburgh
Jones, George H. Jr.....Shamokin
Karpinski, Felix E. Jr.....Philadelphia
Lesse, Stanley.....Philadelphia
Klopp, John B.....Chester
McCort, James J.....Philadelphia
McNeill, John R.....Erie
Menges, Charles G. H.....York
Miller, James E.....Barnesboro
Minnich, Philip H.....York
Monk, John S.....York
Myers, Jacob M. Jr.....Mercersberg
Ochenrider, Paul D.....Aristes
Osheka, William.....Pittsburgh
Putney, Floyd J.....Philadelphia
Rosenberg, Harvey W.....Pittsburgh
Rothfuss, Charles A.....Williamsport
Sgarlat, Joseph R.....Kingston
Shaffer, Jerome D.....Reading
Sinnott, John Jr.....Philadelphia
Snyder, Robert J.....Philadelphia
Strang, John E.....Philadelphia
Wexlar, Irving B.....Philadelphia
Woolmington, Merrill H.....Llanerch

Rhode Island

Blount, Samuel G. Jr.....Providence
Cardillo, Edward.....Longmeadow
Carr, Edward A. Jr.....Cranston

South Carolina

Gunter, Arthur R.....Rock Hill
Hoy, William E. Jr.....Columbia
Martin, Thomas L.....Greenville
Townsend, James M.....Charleston
Turner, Gary E.....Augusta

South Dakota

Donahoe, John W.....Sioux Falls
Greenough, Edward E.....Salem
Kirby, William M. M.....Springfield
Lampert, Arthur A.....Rapid City

Tennessee

Alperin, Ralph.....Memphis
Cosby, Harry Jr.....Memphis
Davis, Martin.....Knoxville
Green, George W. Jr.....Memphis
Harrison, Walton W.....Shelbyville
Kraeft, Nelson H.....Nashville
Mohler, Ebert M. Jr.....Memphis
Moore, Harry T. Jr.....Nashville
Piston, Robert E.....Johnson City

Texas

Cookerly, Van.....Dallas
Henderson, Hodgie C. Jr.....Dallas
Jones, George W.....Taft
Tom, Henry K.....Port Arthur

Virginia

Burdette, Lewis M.....Norfolk
Chitwood, Walter R.....Wytheville
Ediss, Gershon G.....Norfolk
Hardie, Arthur L. Jr.....Danieltown
Pillow, Randolph P.....Roanoke
Schumacher, Jack.....Arlington
Schweizer, Donald C.....Richmond
Stoeckel, Jay E.....Richmond
Troxell, John R.....Charlottesville
West, George B.....Norfolk

Washington

Bader, Bernard A.....Tacoma
Kerron, Seth M.....Vancouver
LaLonde, Edward J.....Vancouver
Leer, Ralph H.....Seattle
McDowell, LeRoy E.....Sumner
Middleton, Thomas T.....Tacoma
Pearce, Earl B.....Seattle
Sterner, John A.....Seattle
Streeper, Richard B.....Buckley

West Virginia

Gray, David B.....Rainelle
Kimball, Walter S.....Sisterville
Lowy, Otto J.....Charleston
Snyder, Thomas M.....Roanoke
Williamson, Robert G.....Charleston

Wisconsin

Anderson, Alton D.....Mondovi
Bolger, James V.....Shorewood
Bourget, Gerald E.....Cadott
Cartwright, George E.....Lancaster
Hackbarth, Daniel E.....Milwaukee
Monroe, Matthew W.....Milwaukee
Mudge, William A.....Milwaukee
Oppert, Harold E.....Merrill
Pachefsky, Hyman.....Milwaukee
Rasmussen, Nathaniel G.....Madison
Schmidt, Robert T.....Milwaukee
Shanberge, Jacob N.....Milwaukee
Spiro, Harry M.....Mendota
Wagner, Marvin.....Milwaukee
Wallner, Alfred.....Madison
Wochos, Robert G.....Kewaunee

Alaska

Martin, Asa L.....Anchorage

Hawaii

Richardson, Barrister A.....Kealakekua

Canal Zone

Etherton, Fred S.....Aancon

Puerto Rico

Jimenez, Rafael A.....Santurce
Medina, Antonio S. Jr.....San Juan

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

COLORADO

Dr. Waring Resigns as Administrator.—Dr. James J. Waring has resigned as the administrative head of the Department of Medicine of the University of Colorado School of Medicine, Denver. He will continue with the school as a full time teaching professor. The new departmental head has not yet been appointed.

Annual Midwinter Postgraduate Clinics.—The thirteenth annual Midwinter Postgraduate Clinics, sponsored by the Colorado State Medical Society, will be held March 3-5 in Denver. Guest speakers will be: Paul D. White, Boston, cardiology; Gershom J. Thompson, Rochester, Minnesota, urology; Everett D. Plass, Iowa City, obstetrics and gynecology; William B. Parsons, New York, surgery; William C. Menninger, Topeka, Kan., psychiatry; William R. Lovelace II, Albuquerque, N. Mex., surgery; John R. Lindsay, Chicago, otolaryngology; Robert L. Jackson, Iowa City, pediatrics, and Franklin M. Hanger, New York, internal medicine.

GEORGIA

Dr. Nonidez Dies.—José F. Nonidez, Sc.D., professor of microscopic anatomy of the University of Georgia School of Medicine, Augusta, died recently, aged 55, of coronary thrombosis. Dr. Nonidez was formerly research associate in the Department of Experimental Evolution at Cold Spring Harbor, N. Y.

Annual Meeting of Ophthalmologists.—The Georgia Society of Ophthalmology and Otolaryngology will hold its annual meeting at the Fulton County Academy of Medicine, Atlanta, March 5-6. The lecturers include Drs. Bennett Y. Alvis, St. Louis; Arthur J. Bedell, Albany; Ramon Castroviejo, New York; J. Brown Farrior, New Orleans; French K. Hansel, St. Louis; J. Elliott Scarborough Jr., Atlanta. There will be no registration fee for out of state guests attending the meeting.

ILLINOIS

Measles Epidemic.—For the week ending February 7 measles cases in the state totaled 1,900 or 108 more than in the preceding week. The total number of cases to February 13 was 7,738 compared with 112 in the corresponding period last year, according to the state health department.

Mental Hygiene Meeting.—The Illinois Society for Mental Hygiene will hold its annual meeting March 18 at the La Salle Hotel, Chicago. The speaker for the dinner at noon, when the society will launch a campaign for children's services, will be Dr. Henry H. Work, New York, and his subject, "Mental Hygiene Needs of Children—1948."

Physical Therapists Meeting.—The Illinois Chapter of the American Physical Therapy Association will hold its regular monthly meeting on March 3 at 7.30 p.m. at Martin's Lounge, 120 South La Salle Street, Chicago. Dr. Fred P. Robbins, Michael Reese Hospital, will conclude a series of three lectures on "Psychosomatic Medicine." Dinner will be served at 6.30 p.m.

Townships Quarantined for Rabies.—A campaign to eliminate a rabies menace, which has already resulted in quarantine in Bloom, Worth, Thornton and Rich townships in Cook County, is being planned by the county health department. The number of cases in the quarantine sections is the highest in seven years, according to Dr. Edward A. Piszczek, county health director. Both Bremen townships and parts of Calumet township are on the borderline of emergency classification. One objective will be to clean up the stray dog situation.

Meeting on Diseases of the Heart.—A joint meeting of the Illinois Heart Association and the Sangamon County Medical Society will be held March 4 at the Memorial Hospital, Springfield, beginning at 2 p.m. After clinicopathologic demonstrations, Dr. Thomas H. Burford, St. Louis, will speak on "Surgery of Congenital Cardiovascular Defects" and Dr. Don C. Sutton, Chicago, "Prognosis in Heart Disease." A panel discussion will begin at 4.30 p.m. At the evening meeting at the Elks Club, Dr. Harry A. Durkin, Peoria, will speak on "American Heart Associations" and Dr. Arlie R. Barnes, Rochester, Minn., on "The Treatment of Congestive Heart Failure."

Chicago

Projector for Educational Film.—A movie projector, gift of the Illinois Women's Golf Association, has been installed in the Museum of Science and Industry for showing films on cancer. The projector automatically shows an educational film dealing with the cell origin, danger signals and necessity for early treatment of cancer.

The Twenty-Fourth Hektoen Lecture.—The twenty-fourth Ludvig Hektoen Lecture of the Frank Billings Foundation will be delivered at the Palmer House on Friday evening, March 26, at 8 o'clock by Dr. Percival Bailey, professor of neurology and neurologic surgery, University of Illinois College of Medicine, on "Organization of the Cerebral Cortex."

Special Society Meeting.—Members of the Chicago Laryngological and Otological Society will be guests of the staff of Illinois Eye and Ear Infirmary at a dinner at 6 p.m., March 1. Richard Silverman, administrative director, Central Institute for the Deaf, St. Louis, will speak on "What is Audiology?" A panel discussion on speech and hearing rehabilitation will also be held.

Dr. Colowick Appointed Associate Professor.—Sidney P. Colowick, Ph.D., an associate in the division of nutrition and physiology at the Public Health Research Institute, New York, has been appointed associate professor of biologic chemistry at the University of Illinois College of Medicine, effective April 1. Dr. Colowick is a graduate of Washington University at St. Louis. During the war he conducted civilian research on chemical warfare agents under contract with the Office of Scientific Research and Development. Dr. Colowick received the Eli Lilly award in biologic chemistry in 1947.

Dr. Ballenger Appointed Director of Department.—Dr. Howard C. Ballenger, who has been a member of the faculty since 1930, has been appointed professor of otolaryngology and chairman of the department in Northwestern University Medical School, succeeding Dr. John Gordon Wilson, retired. Dr. Ballenger received his doctor's degree in medicine from the University of Indiana, 1911. Formerly a consultant to the United States Public Health Service, he is past president of the Chicago Laryngological and Otological Society.

MAINE

Course in Basic Ophthalmology.—The Ophthalmological Study Council, Boston, will offer a course on the basic subjects of ophthalmology at Westbrook Junior College, Portland, June 19 to September 11. The course has proved its value in enabling students to secure residencies and in preparation for examinations of the American Board of Ophthalmology. The course comprises laboratory work in pathology, optics, refraction and slit lamp. Last summer the student enrolment was one hundred and twenty; it will be cut this year to one hundred.

MISSOURI

Meeting of Anesthesiologists.—The regional meeting of the American Society of Anesthesiology and the Kansas City Society of Anesthesiology will be held at the Hotel President, Kansas City, April 4-6. Clinics will be held Monday morning at Research and St. Joseph hospitals in Kansas City, Mo., and at Providence Hospital and the University of Kansas Medical Center, Kansas City, Kan. There will be a symposium on intravenous procaine Tuesday morning, another on spinal, regional and therapeutic nerve block and a third on curare and curare-like compounds in the afternoon.

NEW JERSEY

Dr. English Retires.—Dr. Samuel B. English, superintendent and medical director of the state sanatorium at Glen Gardner since it was established forty years ago, retired Nov. 1, 1947. He is said to be the second oldest superintendent of a tuberculosis hospital in point of service in the United States. The Samuel B. English Memorial Library was dedicated at the sanatorium two years ago. Dr. Joseph A. Smith, assistant medical director, succeeds Dr. English.

Study of Hormones.—A $3,600 grant from the Research Corporation, a nonprofit organization, for research on hormones has been received by Rutgers University, New Brunswick, to support the work of Roderick A. Barnes, Ph.D., assistant professor of chemistry. The Rutgers project involves a study of general methods for the synthesis of steroid compounds, a general classification of naturally-occurring compounds such as the male and female sex hormones, the hormones of the adrenal cortex and bile acids. Dr. Barnes joined the faculty at Rutgers last fall after teaching for two years at Columbia University, New York. He completed his graduate work at the University of Minnesota, Minneapolis, in 1943.

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NEW YORK

Niagara Falls Clinical Day.—The Niagara Falls Academy of Medicine will hold its annual Clinical Day March 6 at the Hotel Niagara. Dr. George Crile, Cleveland, will speak on "The Present Status of Propylthiouracil and of Surgery in the Treatment of Hyperthyroidism"; Dr. Foster Kennedy, New York, "The Allergic Influence in Migraine," and Dr. William Bates, Philadelphia, "Simulation of Thoracic and Abdominal Visceral Pathology by Segmental Neuralgia." At the banquet at 7 p.m. Dr. Maurice Chideckel, Baltimore, will speak on "The General Practitioner."

Six Regional Health Officers Appointed.—Regional Health Officers to head the six newly established state health regions have been appointed by the state health department. They are Drs. Archibald S. Dean, Buffalo; Joseph P. Garens, Rochester; Ray D. Champlin, Oneonta; Ralph M. Vincent, Binghamton; Robert L. Vought, Rochester, and Philip J. Rafle, Forest Hills. The appointments are effective March 16, and regional offices will be opened as soon thereafter as possible. The appointments are based on recent civil service promotion examinations. The salary range is $7,000 to $8,500. Offices of the five upstate health regions will be located at Buffalo, Rochester, Syracuse, Albany and New York City. The sixth region, which will serve New York City only, will also have offices there.

Postgraduate Instruction in Richmond County.—The Medical Society of the State of New York in cooperation with the New York State Department of Health has arranged postgraduate instruction for the Richmond County Medical Society to be given Friday afternoons at 4:30 in the auditorium of the U. S. Marine Hospital, Stapleton, Staten Island.

March 5: Dr. Harry Gold, New York, The Management of the Failing Heart.
March 12: Dr. Albert F. R. Andresen, New York, Gastrointestinal Hemmorrhage.
March 19: Dr. David Goldblatt, New York, Treatment of Burns and Hand Infections.
March 26: Dr. George T. Pack, New York, Cancer of the Stomach.

On March 18 the Geneva Academy of Medicine will hear Dr. Joseph E. J. King, New York, speak on "Head Injuries and Brain Abscess" at the Seneca Hotel, Geneva, 8:30 p. m. Dr. Ferdinand J. Schoeneck, Syracuse, will speak on "Gynecology in General Practice" before the Tompkins County Medical Society Monday, March 15, at 8:30 p. m., at the Tompkins County Memorial Hospital, Ithaca.

New York City

Dr. Steele Appointed Professor.—Dr. J. Murray Steele, associate professor of medicine at New York University College of Medicine since 1939, has been appointed a full professor of medicine and remains director of the Third Research Service, Goldwater Memorial Hospital. For a year and a half Dr. Steele has been director of the New York University Medical Division of Lenox Hill Hospital, and he has recently undertaken research at Goldwater Memorial Hospital in connection with disease associated with old age. He is a graduate of Johns Hopkins Medical School, Baltimore, has been an instructor at the University of Chicago School of Medicine and from 1929 to 1939 was an assistant, then an associate in medicine, at the hospital of the Rockefeller Institute for Medical Research.

Graduate Course in Industrial Medicine.—The Long Island College of Medicine will present its fifth graduate course in industrial medicine April 5-16, under the auspices of the department of preventive medicine and community health. The objective of the course is to provide physicians engaged in full time or part time industrial practice an opportunity to become acquainted with recent developments in industrial medicine. The course will be of special interest also to industrial nurses, hygienists and engineers, personnel workers, representatives of management and labor, and other groups concerned with the health of employees. Tuition for the course will be $75. Inquiries should be addressed to Dr. Thomas D. Dublin, Department of Preventive Medicine and Community Health, 248 Baltic Street, Brooklyn 2.

Lectures for Family Doctors.—A community project to aid family doctors in keeping abreast of medical developments will be inaugurated March 1 at the New York University College of Medicine. Heart disease, psychiatry, anesthesia, dermatology, rehabilitation and physical medicine will be treated in twenty-four clinical sessions; these will be open, free of charge, to members of the medical profession, with faculty members of the college of medicine in charge. Plans call for the clinics to be conducted throughout March, April and May. Registration must be made in advance. Although alumni of the college of medicine are being given preference, effort is being made to accommodate other physicians, and they may obtain information by writing the alumni office at the college, 477 First Avenue, New York 16. All clinics will occur from 4 to 6 o'clock in the afternoon or from 8 to 10 o'clock at night. Half of the two hour sessions will be used for presentation of subject matter, using patients in clinical procedure, and the second hour for open forum discussion. Each special area of medicine will be comprehensively presented over a period of four or six weeks.

NORTH CAROLINA

Memorial Fellowship.—The Charles Hartwell Cocke Memorial Fellowship has been established with the National Tuberculosis Association by a gift of $5,000 from Mrs Charles Hartwell Cocke of Asheville, N. C., in memory of her late husband. Dr. Cocke was a former member of the association.

PENNSYLVANIA

Secretaries and Editors Conference.—The thirty-sixth annual Secretaries and Editors Conference will be held in Harrisburg, Thursday afternoon and evening, March 18, and Friday morning March 19. Officers of the state society, chairmen of the committees on public health legislation, public relations and medical economics are invited to attend, along with county society secretaries and editors of county society bulletins. Representatives of other societies, including the American Medical Association, will be guests. The program will be made up of discussions and round tables. County societies are urged to send their representatives.

Philadelphia

Award for Allergy Paper.—The Philadelphia Allergy Society has established the annual Lillian Snyder Award of $50 for its members, to be presented for the most outstanding paper read at the annual meeting of the society. The award is made possible by a gift from Mr. Louis Snyder in appreciation of the services rendered by a Philadelphia allergist.

Graduate Course in Chest Diseases.—The American College of Chest Physicians, the Pennsylvania Chapter and the Laennec Society of Philadelphia will sponsor the first annual Postgraduate Course in Diseases of the Chest at the Warwick Hotel, Philadelphia, March 15-20. The course will be limited to fifty physicians, applications being accepted in the order received at the American College of Chest Physicians, 500 North Dearborn Street, Chicago 10. The fee of $50 should be enclosed with the application.

Atomic Energy Steering Committee.—The Hospital Council of Philadelphia and the Red Cross, together with members of the medical profession, have formed the Atomic Energy Medical Steering Committee to educate physicians, nurses, hospital personnel and the public in the medical aspects of atomic energy and how to care for and prevent injuries from radioactive substances. Methods include monthly lectures, the first of which drew 250 persons to hear Col. James P. Cooney, M.D., in a talk sponsored jointly with the 248th Medical Unit, M.R.C. Dr. Theodore R. Fetter, president of the Philadelphia County Medical Society, is chairman of the committee.

Pittsburgh

Dr. Rawson to Give Memorial Lecture.—The Doctors Charles and Karl Emmerling Memorial Lecture will be given Tuesday, March 9, 1948, in the rooms of the Academy of Medicine, 322 North Craig Street, by Dr. Rulon W. Rawson, Boston, on "The Effect of Therapeutic Agents on the Pathologic Physiology of Graves' Disease."

Premedical Chapter Installed.—Chi Rho Nu, premedical fraternity of the University of Pittsburgh, became the fortieth chapter of Alpha Epsilon Delta, national honorary premedical fraternity, on its installation as the Pennsylvania Gamma Chapter on January 17. The initiation of one hundred and fifteen active and ten honorary members was conducted by national officers of the fraternity.

TEXAS

Phi Beta Pi Lecture.—Dr. Charles H. Best, University of Toronto, Canada, will deliver the annual Phi Beta Pi lecture at Baylor University College of Medicine, Houston, on the evening of March 22, and will spend the remainder of that week as a visiting professor in the department of physiology.

Society Election.—The Texas Society of Pathologists, at its annual meeting in Galveston, January 25, elected Dr. William W. Coulter, Houston, president; Dr. John F. Pilcher, Corpus Christi, president-elect; Dr. Charles T. Ashworth, Dallas, secretary. Dr. Theodore J. Curphey, Garden City, N. Y., was guest of the society.

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WEST VIRGINIA

Health Officers to Teach at State Schools.—Two county health officers recently confirmed by the public health council will teach classes in public health at state schools in addition to performing their official duties. Dr. Milton I. Roemer, Washington, D. C., who became health officer for Monongalia County February 1, will teach public health at West Virginia University, Morgantown Dr. Alford G. Evans, Washington, D. C., who assumed his duties as health officer for Marion County February 1, will teach at Fairmont State Teachers College. Both officers have a master's degree in public health.

Survey of Practicing Physicians.—The state health department, as the result of an order entered at the last meeting of the public health council, is undertaking a survey of physicians practicing in West Virginia. The state has no law requiring the annual or biennial registration of physicians. The state health commissioner has mailed a questionnaire to every physician in the state asking for statistical information. This questionnaire should be filled out and returned without delay. Additional copies may be obtained from the state health department, local medical societies and the West Virginia State Medical Association.

Premature Nursery Established.—The premature nursery, established at the Herbert J. Thomas Memorial Hospital in South Charleston, sponsored by the state department of health, was opened February 16. Incubators furnished by the division of maternal and child health have been placed in the pediatric ward of the hospital. The nursery is a demonstration center; if it proves successful, other premature nurseries will be established throughout the state in an effort to reduce the mortality of premature infants in West Virginia. The new nursery will be used as a training center in this type of work. Preference will be given graduate nurses until space and personnel permit the training of a larger group. The nursery is in charge of Miss Mary Alice Sinclair, who has received special training in Chicago for this work under the auspices of the state health department.

WISCONSIN

Personal.—Dr. Walter J. Urben, Madison, director of the Wisconsin State Public Welfare Department's mental hygiene division since 1942, has been appointed superintendent of the Mendota State Mental Hospital, Mendota.

Anniversary of Occupational Therapy Department.—Milwaukee-Downer College will observe the thirtieth anniversary of its department of occupational therapy March 23. Dr. Howard A. Rusk, chairman, department of rehabilitation and physical medicine, New York University College of Medicine, will present "Today's Challenge to Occupational Therapy." The department of occupational therapy was set up at Milwaukee-Downer in 1918 by Mrs. Carl H. Davis, now of Wilmington, Del., in response to the call of Gen. John J. Pershing for a thousand women volunteers to do bedside occupational work. When in 1918 the term "occupational therapy" was first used, a new profession was born. Marjorie Taylor, director of the department at Milwaukee-Downer from 1929 to 1939, developed the studies into a course leading to a B.S. degree. Miss McNary, who has directed the department since 1939, also conducted courses for the Army during World War II.

GENERAL

Course for Medical Record Librarians.—The American Association of Medical Record Librarians this year will give extension courses throughout the country. Three types of courses are being offered: a two week basic course for beginners, the one week regular course as previously given, and an advanced course, or workshop. Any one working in the medical record department of a hospital is eligible to attend any course unless definite prerequisites are stated. The following programs are scheduled: March 29-April 2, the regular course at Tulsa, Okla.; April 5-16, a two week beginners' course at Houston, Texas; May 23-28, an advanced course at Denver. For information address Edna K. Huffman, R.R.L., American Association of Medical Record Librarians, 18 East Division Street, Chicago.

A Million for Poliomyelitis Research.—The National Foundation for Infantile Paralysis reports as of February new grants and appropriations totaling $1,188,785.40 for research and education in hospitals and other institutions in the United States and Canada. Of the new appropriation, $350,000 is to continue the foundation's physical therapy program, $200,000 for fellowships in professional education and $35,000 for new scientific exhibits. The George William Hooper Foundation, University of California Medical School, Berkeley-San Francisco, was granted $43,090 to continue its study of poliomyelitis epidemics, diagnostic procedures, transmission of the disease and possible reservoirs of the virus. The University of Pennsylvania, Philadelphia, received $136,500 for a five year study to evaluate treatment methods to ameliorate the crippling after-effects of poliomyelitis; Children's Hospital, Philadelphia, $25,000 to continue studies on the effect of dietary factors and nutrition on resistance to poliomyelitis; University of Southern California, Los Angeles, $28,800 to continue studies of types of virus which can cause the disease, and $13,400 for a study of the growth requirements of the virus; Emory University, Atlanta, received $22,880 to develop better methods for diagnosis and $11,300 for a study of differences in muscle cells in relation to susceptibility to paralysis.

Southwest Allergy Forum.—The 1948 meeting of the Southwest Allergy Forum will be held April 5-6, at the Biltmore Hotel, Oklahoma City, under the presidency of Dr. Herbert J. Rinkel of Kansas City, Mo. The program for Monday includes a roundtable discussion on seasonal hayfever. Guest speakers will be Dr. Bernardine T. McMahon, Denver, on "Bronchiectasis" and Dr. Jonathan Forman, Columbus, on "Urticaria." On Tuesday there will be a roundtable discussion on asthma and a talk by Dr. Karl D. Figley, Toledo, president of the American Academy of Allergy.

Dr. Diamond Appointed Technical Director of Blood Program.—Dr. Louis K. Diamond, assistant professor of pediatrics, Harvard Medical School, Boston, was appointed on February 2 technical director of the national blood bank program of the American Red Cross. Dr. Diamond, who has been associated with Harvard Medical School since his graduation in 1927, directed the first large scale blood laboratory, which was established at Children's Hospital, Boston, in 1942.

Elmer Hess Prize in Urology.—The Western New York and Ontario Urological Society announces the annual Elmer Hess Prize, which includes $25 plus the winner's own personal hotel expense while attending the meeting at which the paper will be read. Eligible are residents or interns in urology, or urologists with not more than two years in practice who reside in the society's area. The paper may be on any subject related to urology and shall be limited to ten triplespaced pages. Three copies of the paper should be mailed to Dr. N. W. Roome, 170 St. George Street, Toronto 5, Ontario, Canada, before June 1, 1948.

Industrial Physicians and Surgeons Meeting.—The American Association of Industrial Physicians and Surgeons will hold its thirty-third annual meeting at the Hotel Statler, Boston, March 30 to April 2, under the presidency of Dr. Henry S. Brown, Detroit. The program will begin Tuesday morning with a clinic at the Massachusetts General Hospital. Joseph C. Aub, Boston, will speak on "Recent Studies in Beryllium" and Edwin F. Cave and Charles B. Burbank, Boston, on "The Surgery of Trauma." Other speakers include:

TUESDAY

Joseph H. Shortell, Boston, Shoulder Injuries.
William F. Flynn, Boston, Infections of the Hand.
Albert A. Hornor, Boston, Industrial Problem in Diabetes Mellitus.
John D. Adams, Boston, Double Plating of Long Bones, End Results.

WEDNESDAY

Edward E. F. Adolph, Ph.D., Rochester, N. Y., Theodore F. Hatch, Pittsburgh, and Arlie Bock, Boston, Papers on the Subject of Heat.
James M. Dunning, Boston, Public Health Aspect of Dentistry in Industry.
Selden D. Bacon, Ph.D., New Haven, Conn., Alcoholism in Industry.
Oliver Cope and Francis D. Moore, Boston, Management of Burns.
Arthur L. Watkins, Boston, and George G. Deaver, New York, Seminar in Physical Medicine.

THURSDAY

George E. Morris, Boston, The Skin: the Fragile Element in Industrial Production.
Chester S. Keefer, Boston, Chemotherapy and Antibiotics.
Howard B. Sprague, Boston, Coronary and Other Heart Disease.
Chester M. Jones, Boston, Management of Peptic Ulcer.
Hugh F. Hare, G. Edmund Haggart and James L. Poppen, Boston, Seminar on Back Pain.

The annual banquet will be April 1 at 7 p.m. Dr. Frank H. Lahey, director of the Lahey Clinic, Boston, will speak on "Problems and Advances in Medicine and Surgery."

CORRECTION

Dosage of Antimonium Potassium Tartrate.—The last sentence in the letter to the Editor entitled Schistosomiasis by F. Gordon Cawston, Durban, South Africa, in THE JOURNAL, Dec. 27, 1947, page 1167, should read: "An injection of 0.1 Gm. may well be regarded as the maximum."

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Deaths

Benjamin Franklin Gallant ✠ Northport, N. Y.; born in Somerville, Mass., March 25, 1879; College of Physicians and Surgeons, Baltimore, 1913; formerly associated with the Gouverneur Hospital, Bellevue and Allied Hospitals and the Lying-In Hospital in New York, Kankakee (Ill.) State Hospital, Lincoln (Ill.) State Hospital, St. Vincent's Hospital in Bridgeport, Conn., and the Mather Memorial Hospital in Port Jefferson; served as resident director of the Charity Hospital and medical director of St. Luke's Private Sanitarium in New Orleans; at one time owner and director of the Belvidere Private Sanitarium in New Orleans and medical director of Dr. Gallant's Neurological Hospital in Pass Christian, Miss.; died Nov. 10, 1947, aged 68, of coronary thrombosis.

Curtis Field Burnam ✠ Baltimore; born Jan. 17, 1877; Johns Hopkins University School of Medicine, Baltimore, 1900; associate professor of surgery at his alma mater; member of the House of Delegates of the American Medical Association in 1915; member of the American Gynecological Society, Southern Surgical Association and the American Radium Society; fellow of the American College of Surgeons; in 1936 received the Janeway Medal from the American Radium Society; co-author with Dr. Howard A. Kelly of "Diseases of the Kidneys, Ureters and Bladder"; affiliated with the Church Home and Infirmary, Hospital for the Women of Maryland, Johns Hopkins Hospital and the Union Memorial Hospital, where he died Nov. 29, 1947, aged 70, of pneumonia.

J. Ross Hunter ✠ Charleston, W. Va.; born in New Sterling, N. C.; Feb. 26, 1880; Medical College of Virginia, Richmond, 1903; fellow of the American College of Surgeons; member of the board of directors of the American Cancer Society; member of the board of directors and the executive committee of the West Virginia Cancer Society, which he helped to organize; served during World War I; at one time chief of the surgical staff of the Sheltering Arms Hospital at Hansford; one of the organizers, a trustee and for many years superintendent of the Mountain State Memorial Hospital; president of the staff of the Herbert J. Thomas Memorial Hospital in South Charleston; died Dec. 31, 1947, aged 67, of coronary thrombosis.

Hiram Edgar Miller ✠ San Francisco; born in Dixon, Ill., Aug. 30, 1891; University of California Medical School, San Francisco, 1917; clinical professor and chairman of the department of dermatology at his alma mater; specialist certified by the American Board of Dermatology and Syphilology; member of the American Dermatological Association and the American Academy of Dermatology and Syphilology; served in France during World War I; affiliated with the San Francisco, Southern Pacific General, St. Luke's, Mount Zion and Children's hospitals; died in the University of California Hospital recently, aged 56.

Richard Covert Satterlee ✠ Captain, M.C., U. S. Navy, retired, San Francisco; born in Layfayette, Ind., Jan. 13, 1894; George Washington University School of Medicine, Washington, D. C., 1917; specialist certified by the American Board of Pathology, Inc.; entered the medical corps of the U. S. Navy in September 1917; served during World Wars I and II; retired for disability in line of duty; served as executive officer at the U. S. Naval Convalescent Hospital in Yosemite National Park, Calif.; died in the United States Naval Hospital in Mare Island, Calif., May 16, 1947, aged 53, of hypertension.

Benjamin Franklin Hambleton, Houston, Texas; born in 1872; University of Wooster Medical Department, Cleveland, 1900; professor of physiology and pharmacology at Baylor University College of Medicine; formerly professor of physiology and pharmacology at the Vanderbilt University School of Medicine in Nashville, Tenn., where he also served as acting dean and secretary of the medical school; at one time professor of physiology at the Cleveland College of Physicians and Surgeons, Medical Department, Ohio Wesleyan University; died Dec. 9, 1947, aged 75, of coronary occlusion.

Donald Carl Snyder ✠ Colonel, U. S. Army, retired, Longmont, Colo.; born in Belle Plaine, Iowa, March 17, 1896; State University of Iowa College of Medicine, Iowa City, 1919; Army Medical School and Medical Field Service School in 1929; served during World War I; entered the medical corps of the U. S. Army as a first lieutenant in 1927; a lieutenant colonel and colonel during World War II; retired for disability in line of duty on May 31, 1945 with rank of colonel; died in Fitzsimons General Hospital, Denver, Dec. 21, 1947, aged 51, of mitral stenosis and bronchial asthma.

Harry Garrett Miller, Millville, N. J.; born Sept. 11, 1869; University of Pennsylvania Department of Medicine, Philadelphia, 1897; member of the American Medical Association; past president and for many years secretary of the Cumberland County Medical Society; county physician; past president of the city council; member of the U. S. Pension Board for many years; active on the Selective Service Board during World War II; on the staff of the Millville Hospital since its inception, serving as president for four terms; died Nov. 30, 1947, aged 78, of coronary thrombosis.

Archibald John Alcorn, Chicago; College of Physicians and Surgeons, School of Medicine of the University of Illinois, 1900; died recently, aged 80.

Ella Mary Anderson, Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1893; died in the Woman's Hospital recently, aged 83, of pulmonary edema.

Pasquale Assante, Philadelphia; Regia Università di Napoli Facoltà di Medicina e Chirurgia, Italy, 1891; died in the Jefferson Hospital Nov. 22, 1947, aged 82, of arteriosclerosis.

William Simpson Bailey, Poplar Bluff, Mo.; St. Louis College of Physicians and Surgeons, 1898; formerly member of the school board; served as registrar of vital statistics in Butler County; died Nov. 27, 1947, aged 81, of myocarditis.

Howard Roswell Bankerd, Port Townsend, Wash.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1904; died recently, aged 72, of heart disease.

John Albert Bennett, Elmira, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1905; member of the American Medical Association; died Nov. 21, 1947, aged 67, of cerebral thrombosis and bronchopneumonia.

William Clement Bosley, Houston, Texas; Medical Department of Tulane University of Louisiana, New Orleans, 1900; died Nov. 22, 1947, aged 72.

George Cummings Bower ✠ Marcy, N. Y.; University of Buffalo School of Medicine, 1922; specialist certified by the American Board of Pathology, Inc.; fellow of the American College of Physicians; member of the American Society of Clinical Pathologists; associate editor of the Psychiatric Quarterly; director of clinical laboratories at the Marcy State Hospital, where he died Dec. 1, 1947, aged 46.

Melville Grant Boyd, Dalton, Mass.; Queen's University Faculty of Medicine, Kingston, Ontario, Canada, 1929; member of the American Medical Association; served during World War II; died recently, aged 49, in Kingston, Ontario.

Joseph Holmes Branson ✠ Washington, D. C.; Southern Homeopathic Medical College, Baltimore, 1894; died Nov. 30, 1947, aged 81, of cerebral embolus.

John Q. Brantley, Atlanta, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1905; affiliated with the Crawford W. Long Hospital, where he died Nov. 21, 1947, aged 66, of arteriosclerosis and pneumonia.

Norman Christopher Browand, Hermosa Beach, Calif.; Fort Wayne (Ind.) College of Medicine, 1896; formerly on the staff of the Miami Valley Hospital in Dayton, Ohio; died in Glendale, Calif., Nov. 30, 1947, aged 81, of cerebral hemorrhage.

Edwin Rutherford Butterfield ✠ Burbank, Calif.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1912; died Nov. 29, 1947, aged 63.

James Frank Cadenhead, Weinert, Texas; Fort Worth School of Medicine, Medical Department of Texas Christian University, 1914; member of the American Medical Association; for many years president of the school board; served during World War I, and during World War II chairman of the medical division of the selective service board of Haskell County; died Nov. 21, 1947, aged 56, of carcinoma.

Howard Allen Calvert, Frederick, Okla.; John A. Creighton Medical College, Omaha, 1912; member of the American Medical Association; served during World War I; affiliated with the Frederick Clinic Hospital and the Spurgeon, Arrington and Allen Hospital and Clinic; died Nov. 27, 1947, aged 58, of coronary thrombosis.

William Rogers Castle, Paintsville, Ky.; Hospital College of Medicine, Louisville, 1907; member of the American Medical Association; served as a member of the city council; died Nov. 29, 1947, aged 65, of diabetes mellitus.

Timothy L. Chiasson, ✠ Neponset, Ill.; Loyola University School of Medicine, Chicago, 1916; an examining physician for the county selective service board during World War II; member of the local board of health; affiliated with the Public Hospital and St. Francis Hospital in Kewanee; died Dec. 6, 1947, aged 60, of coronary heart disease.

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Floyd Clardy ✠ Hot Springs National Park, Ark.; University of Tennessee College of Medicine, Memphis, 1916; served during World War I; affiliated with the Methodist Hospital and St. Joseph's Infirmary; died Nov. 22, 1947, aged 59, of hypertension and cerebral hemorrhage.

Eliza Cook, Gardnerville, Nev.; Cooper Medical College, San Francisco, 1884; died recently, aged 91.

Thomas Joseph Coyne ✠ Boston; Tufts College Medical School, Boston, 1901; affiliated with Children's, St. Elizabeth, St. Margaret's and Harley hospitals; died Dec. 4, 1947, aged 75, of heart disease.

William Henry Crawford, Jackson, Miss.; John A. Creighton Medical College, Omaha, 1914; served during World Wars I and II; affiliated with the Veterans Administration Hospital; died Nov. 25, aged 58, of postoperative shock.

Whitfield Walker Crook ✠ Cuthbert, Ga.; University of the South Medical Department, Sewanee, Tenn., 1908; served during the Spanish-American War and World War I; died Nov. 11, 1947, aged 67, of heart disease and pulmonary embolism.

James Erric Cudd ✠ Spartanburg, S. C.; University of Maryland School of Medicine, Baltimore, 1916; for many years county physician; died in Mary Black Memorial Hospital Nov. 14, 1947, aged 56, of acute pancreatitis.

Hyman Dickman, Philadelphia; Maryland Medical College, Baltimore, 1911; died recently, aged 64, of cerebral thrombosis and diabetes mellitus.

Gustave William Dishong ✠ Omaha; born in San Francisco, Nov. 9, 1874; John A. Creighton Medical College, Omaha, 1907; for many years professor and head of the department of nervous and mental diseases at his alma mater, where in 1939 he retired with the title of professor emeritus; fellow of the American College of Physicians; member of the American Psychopathological Association; served in France during World War I; affiliated with St. Joseph's Hospital, where he died Nov. 24, 1947, aged 73, of carcinoma of the rectum.

Henry Aaron Dittmer, Manchester, Iowa; the Hahnemann Medical College and Hospital, Chicago, 1884; died Nov. 26, 1947, aged 89, of senility.

Libby Russell Doll, St. Louis; American Medical College, St. Louis, 1901; died Nov. 9, 1917, aged 75, of heart disease.

Walter Livingston Dunning ✠ Paterson, N. J.; Long Island College Hospital, Brooklyn, 1898; died Nov. 29, 1947, aged 71, of myocardial infarction and arteriosclerosis.

Mark Matthew Duffy, Chicago; Bennett Medical College, Chicago, 1915; received the Distinguished Service Cross for bravery in France during World War I; died Dec. 11, 1947, aged 57, of acute cardiac dilatation.

Sarah May Edwards, Bloomfield, N. J.; Woman's Medical College of the New York Infirmary for Women and Children, New York, 1899; died in the Community Hospital, Montclair, Nov. 23, 1947, aged 78, of cerebral hemorrhage and hypertension.

William G. Estill, Lawson, Mo.; Missouri Medical College, St. Louis, 1883; died Nov. 27, 1947, aged 87, of cardiorenal disease.

Joseph Otto Evans, Linden, N. J.; Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main, Prussia, Germany, 1922; member of the American Medical Association; school physician; physician for the child health clinic of the board of health; died Nov. 23, 1947, aged 49, of myelogenous leukemia.

William Rollie Ferster, Kansas City, Mo.; University Medical College of Kansas City, Mo., 1908; member of the American Medical Association; died Nov. 11, 1947, aged 74, of cerebral hemorrhage, hypertension and hypertrophic arthritis.

Simon Sylvester Foster, Atlanta, Ga.; University of Tennessee College of Medicine, Memphis, 1911; at one time company physician for the Stearns Coal and Lumber Company in Stearns, Ky.; for many years on the staff of the Veterans Administration Hospital; died Nov. 27, 1947, aged 60, of coronary occlusion.

Claude Augustine Frink ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1902; fellow of the American College of Surgeons; formerly a lieutenant in the U. S. Naval Reserve; surgeon at the Knickerbocker Hospital; died recently, aged 71, of heart disease.

James De Witt George, Los Angeles; Indiana University School of Medicine, Indianapolis, 1926; member of the American Medical Association; served on the staff of the Compton (Calif.) Sanitarium and as chief resident physician at the William H. Coleman Hospital for Women, Indianapolis; died Nov. 16, 1947, aged 48.

Thomas M. Glasgow ✠ Passaic, N. J.; Baltimore Medical College, 1902; on the staff of the Passaic General Hospital; died Nov. 29, 1947, aged 69, of coronary thrombosis.

Marvin Myers Gould ✠ Surgeon, Lieutenant Commander, U. S. Navy, retired, Boston; entered the U. S. Navy in June 1919; retired June 30, 1939; served during World War II; on Jan. 24, 1943 the Navy Department announced the award of a letter of commendation for his services in caring for victims of the Cocoanut Grove fire in Boston on Nov. 28, 1942; died at Barranquilla, Colombia, Nov. 14, 1947, aged 57.

Moritz Gross ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1898; affiliated with the Park West Hospital; died in the Beth David Hospital recently, aged 74.

Gordon Milton Grundy ✠ Newport Beach, Calif.; McGill University Faculty of Medicine, Montreal, Canada, 1913; served during World War I; died in St. Joseph Hospital, Orange, Calif., Dec. 16, 1947, aged 61, of cerebral hemorrhage.

Charles Nicholas Harper ✠ New York; University of Virginia Department of Medicine, Charlottesville, 1915; specialist certified by the American Board of Otolaryngology; affiliated with the Roosevelt Hospital; died Nov. 26, 1947, aged 57, of heart disease.

John Calvin Hartman ✠ Philadelphia; University of Pennsylvania School of Medicine, Philadelphia, 1917; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; served during World War I; affiliated with the Abington (Pa.) Memorial Hospital and Germantown Hospital; died Dec. 13, 1947, aged 56, of coronary thrombosis.

Charles Cheves Haskell ✠ Richmond, Va.; Harvard Medical School, Boston, 1908; at one time professor of physiology and pharmacology at the Medical College of Virginia; president of the Charles C. Haskell Company; affiliated with the Johnston-Willis Hospital; died Nov. 12, 1947, aged 67, of cerebral hemorrhage.

Selmar Frederick Hauser, Covington, Ky.; University of Cincinnati College of Medicine, 1916; served in France during World War I; member of the American Medical Association; died in St. Elizabeth Hospital Nov. 26, 1947, aged 54.

Thomas Southall Hawkins, Baltimore; Howard University College of Medicine, Washington, D. C., 1900; died recently, aged 77, of carcinoma of the prostate.

Frederick Edward Hesser, Baltimore; Southern Homeopathic Medical College, Baltimore, 1904; served on the staff of the Church Home and Infirmary; died in Shamokin, Pa., Nov. 24, 1947, aged 72, of cerebral thrombosis and bronchopneumonia.

George H. Hocking ✠ Baltimore; University of Maryland School of Medicine, 1879; an Affiliate Fellow of the American Medical Association; died Nov. 25, 1947, aged 92, of arteriosclerosis and pneumonia.

Benjamin F. Humphrey, Sturgis, Ky.; University of Louisville (Ky.) Medical Department, 1901; past president of the school board; died Nov. 25, 1947, aged 70, of coronary thrombosis.

Walter Eugene Hurley ✠ Brooklyn; Long Island College Hospital, Brooklyn, 1908; also a graduate in pharmacy; examiner for the local draft board during World War I; for many years affiliated with St. Catherine's and St. Mary's hospitals; died in the Mercy Hospital, Rockville Centre, Dec. 14, 1947, aged 66, of carcinoma of the rectum.

Herman Samuel Jacobs, New York; University and Bellevue Hospital Medical College, New York, 1908; died Nov. 10, 1947, aged 61.

Carl Emanuel Johnson, Pine River, Minn.; Rush Medical College, Chicago, 1903; member of the American Medical Association; died in Fort Dodge, Iowa, Nov. 11, 1947, aged 74, of arteriosclerosis and paralysis agitans.

John Francis Kelly, Scranton, Pa.; Cornell University Medical College, New York, 1910; member of the American Medical Association; affiliated with the Mercy Hospital, St. Mary's Hospital and the Scranton State Hospital, where he died Nov. 30, 1947, aged 64, of uremia.

Richard James Kelly ✠ New York; University of Pennsylvania School of Medicine, Philadelphia, 1928; specialist certified by the American Board of Dermatology; member of the American Academy of Dermatology and Syphilology; affiliated with the Vanderbilt Clinic and Roosevelt Hospital; died Nov. 27, 1947, aged 45, of a skull fracture.

Peter Ernest Kierland ✠ Alexandria, Minn.; Rush Medical College, Chicago, 1902; died Nov. 26, 1947, aged 69, of coronary thrombosis.

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Charles Kleiman ✠ Orangeburg, N. Y.; Tufts College Medical School, Boston, 1931; specialist certified by the American Board of Psychiatry and Neurology, Inc.; member of the American Psychiatric Association; associate in neurology and psychiatry at the Long Island College of Medicine in Brooklyn; affiliated with the Rockland State Hospital; died Nov. 20, 1947, aged 42, of coronary thrombosis.

Mary Jeannette Lower, Kansas City, Mo.; Southwest School of Medicine and Hospital, Kansas City, 1916; member of the American Medical Association; died in Burlington, Iowa, Nov. 27, 1947, aged 80.

Robert Price McClellan ✠ Irwin, Pa.; Jefferson Medical College of Philadelphia, 1888; chairman of the board of directors and past president of the First National Bank; died in the Westmoreland Hospital in Greensburg, recently, aged 84, of injuries received in an automobile accident.

Ward Benefiel McMakin, Camas, Wash.; Eclectic Medical Institute, Cincinnati, 1903; member of the American Medical Association; died recently, aged 71.

John Bowdoin Mears ✠ Medical Director, Captain, U. S. Navy, retired, Keller, Va.; University of Virginia Department of Medicine, Charlottesville, 1901; entered the U. S. Navy in 1905 and retired Sept. 1, 1936 for incapacity resulting from an incident of the service; died Nov. 16, 1947, aged 68.

Hugh William Mullins, Helena, Mont.; Loyola University School of Medicine, Chicago, 1919; formerly affiliated with Alexian Brothers' and St. Mary of Nazareth hospitals in Chicago; died in St. John's Hospital Dec. 7, 1947, aged 61, of intestinal carcinoma.

Joseph Berchmain O'Neill, Pawtucket, R. I.; University of Maryland School of Medicine, Baltimore, 1900; died recently, aged 76.

John Randolph Quinn Jr., New York; Cornell University Medical College, New York, 1913; died in St. Luke's Hospital recently, aged 60.

Arthur T. Revell, Columbus, Kan.; Kansas City (Mo.) Medical College, 1900; member of the American Medical Association; affiliated with Mount Carmel Hospital in Pittsburg, where he died recently, aged 69, of cerebral hemorrhage and pneumonia.

Alonzo Leroy Reynolds, Webster Groves, Mo.; Meharry Medical College, Nashville, Tenn., 1927; examining physician for the board of education; served on the staffs of the Homer G. Phillips Hospital and St. Mary's Infirmary, in St. Louis, where he died recently, aged 49, of pyloric obstruction and gastric hemorrhage.

Ralph Dresden Robinson ✠ Mount Vernon, Ill.; University of Tennessee College of Medicine, Memphis, 1935; past president of the Tillman County (Okla.) Medical Society; member of the Missouri State Medical Association; served during World War II; served as a member of the department of medicine and surgery of the Veterans Administration and assigned to the surgical section of the veterans' hospital in Fort Bayard, N. Mex.; died in the Veterans Administration Hospital, Topeka, Kan., recently, aged 38, of diabetes mellitus.

Neff Lloyd Ross, Colorado Springs, Colo.; Yale University School of Medicine, New Haven, 1946; interned at the University Hospitals; died recently, aged 25, of Hodgkin's disease.

Boyd Willamber Schaffner, Akron, Ohio; Jefferson Medical College of Philadelphia, 1902; member of the American Medical Association; died recently, aged 71, of heart disease.

Charles Edward Seale, Houston, Texas; Louisville (Ky.) Medical College, 1905; affiliated with the Park View Hospital; died recently, aged 66, of heart disease.

Edgar L. Simonton, Wendell, Idaho; Kansas City (Mo.) Medical College, 1896; member of the American Medical Association; died in Rochester, Minn., Nov. 27, 1947, aged 78, of uremia and prostatic hypertrophy.

Edward I. Sloan, Fort Lauderdale, Fla.; Loyola University School of Medicine, Chicago, 1918; formerly associated with the U. S. Public Health Service; served on the staff of the U. S. Marine Hospital in Chicago; died recently in Chicago, aged 64, of coronary disease.

George McClelland Speck, Huntingdon, Pa.; Jefferson Medical College of Philadelphia, 1888; died recently, aged 84, of arteriosclerosis.

Nathaniel L. Spengler, Tampa, Fla.; University of Maryland School of Medicine, Baltimore, 1903; member of the American Medical Association; died in the Tampa Hospital Nov. 28, 1947, aged 69, of myocardial failure.

Seth Billington Sprague ✠ Jersey City, N. J.; Baltimore Medical College, 1906; fellow of the American Academy of Orthopedic Surgeons; formerly on the faculty of the New York Post-Graduate Medical School and Hospital, Columbia University; affiliated with Hudson County Tuberculosis Hospital, Margaret Hague Maternity Hospital and Christ Hospital; member of the city medical advisory board during World Wars I and II; died in the Memorial Hospital in New York, Nov. 23, 1947, aged 69, of pneumonia.

Frank Bell Steele ✠ St. Petersburg, Fla.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1899; member and formerly secretary of the Utah State Medical Association; fellow of the American College of Physicians; specialist certified by the American Board of Internal Medicine; served on the staffs of Veterans Administration hospitals in various cities; died recently, aged 73.

Arthur Tumpin Stevens, Tampa, Fla.; Hospital Medical College, Atlanta, 1911; member of the American Medical Association and the Medical Association of Georgia; died in Bay Pines, Nov. 29, 1947, aged 72, of coronary thrombosis.

Henry Barrell Strock, Bedford, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1894; for many years president of the school board; died Nov. 29, 1947, aged 79, of arteriosclerosis.

Harry Alfred Terry, Tampico, Ill.; Washington University School of Medicine, St. Louis, 1904; died recently, aged 69.

Willie Burt Trammell, Lawrenceville, Ga.; University of Georgia School of Medicine, Augusta, 1940; served as health commissioner; died recently, aged 33.

Frank Herbert Underwood, Monongahela, Pa.; Western Pennsylvania Medical College, Pittsburgh, 1894; member of the American Medical Association; affiliated with Memorial Hospital; died in Mercy Hospital, Pittsburgh, recently, aged 78, of cerebral hemorrhage.

Lionel O. Waguespack, Vacherie, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1900; member of the American Medical Association; died Nov. 3, 1947, aged 69.

Bishop Billings Warwick, Talladega, Ala.; Medical Department of Tulane University of Louisiana, New Orleans, 1902; member of the American Medical Association; past president and secretary of the Talladega County Medical Society; served overseas during World War I; for many years county health officer; staff physician of the Alabama Institute for Deaf and Blind; died in New Orleans recently, aged 68, of coronary thrombosis.

Samuel Melville Waterhouse ✠ Colonel, U. S. Army, retired, Scarsdale, N. Y.; Medical College of Ohio, Cincinnati, 1894; entered the regular army as an assistant surgeon on July 23, 1898; served during World War I; retired from active service Aug. 6, 1920 for physical disability incident thereto; died in Palm Beach, Fla., Feb. 19, 1944, aged 73, of thrombosis.

Leonard Gruner Weber ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1900; fellow of the American College of Physicians; served on the staffs of Lenox Hill Hospital and the Manhattan Eye, Ear, Nose and Throat Hospital; died Nov. 30, 1947, aged 69, of coronary sclerosis.

W. Frank Wells, Atlanta, Ga.; Atlanta School of Medicine, 1911; member of the American Medical Association; fellow of the American College of Surgeons; twice mayor of Hapeville, Ga.; affiliated with the Grady Hospital and the Georgia Baptist Hospital, where he died Nov. 7, 1947, aged 63, of cerebral hemorrhage.

Charles D. Williamson, Three Rivers, Texas; College of Physicians and Surgeons, Dallas, 1906; member of the American Medical Association; past president of the Bee-Live Oak-McMullen Counties Medical Society; died recently, aged 78, of carcinoma.

Benjamin Franklin Windle, Bois D'Arc, Mo.; Barnes Medical College, St. Louis, 1897; affiliated with the Baptist Hospital in Springfield; died recently, aged 72, of coronary thrombosis.

Elizabeth Mildred Yates, Santa Rosa, Calif.; Cooper Medical College, San Francisco, 1887; member of the American Medical Association; died recently, aged 94, of arteriosclerosis.

Patrick Joseph York, Brooklyn; Long Island College Hospital, Brooklyn, 1897; for many years police surgeon; affiliated with Kings County Hospital, Long Island College Hospital and St. Peter's Hospital, where he died Nov. 25, 1947.

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Foreign Letters

LONDON

(From Our Regular Correspondent)

Jan. 31, 1948.

The Struggle over the National Health Service

The greatest crisis in the history of the medical profession in this country is reached as the plebiscite of the whole of its members is taken by the British Medical Association to ascertain exactly the position of the profession with regard to the National Health Service. Reports from all parts of the country suggest, says the *British Medical Journal*, that an overwhelming majority of doctors are radically opposed to the service in its present form. They are convinced that it is the first step toward full time service. However, there is a minority, whose exact size will be ascertained by the plebiscite, who are in favor of accepting the service. This view is advocated by the *Lancet*, while suggesting concessions to meet the objections of the profession. It argues that National Health Insurance, which was introduced in 1913 for only wage earners, against the will of most of the profession, has proved advantageous both to the public and the profession, so that in 1930 the British Medical Association was recommending its extension with improvements. The association is now in favor of this extension in place of the present scheme, but the socialist government on its own initiative and without any opposition has extended free medical attendance of all kinds, domiciliary and hospital, general practitioner and specialist, to rich and poor alike. The *Lancet* holds that there are cogent reasons for this. The cost of illness now falls disastrously on the middle class. The negotiating committee of the profession accepted the inclusion of all, rich and poor. It thus agreed, wisely or unwisely, that the profession must henceforth work within the framework of a public service and no longer depend on private fees.

Evidently with the intention of "throwing oil on the troubled waters" the *Lancet* has submitted nine questions to the Minister of Health, which, with his answers, are published in the *British Medical Journal* as well as the *Lancet*. The intention of the government is that the main source of the doctor's income shall be by capitation. The advantages of the basic salary are that it enables beginners to live while they attract patients and that it affords a convenient peg on which to hang additional payments, such as for sparsely populated areas, and reduces the temptation to try to build up excessively long patient lists.

The sale of practices has been condemned by some reformers, but there are great difficulties in abolishing a custom which is the financial backbone of general practice in this country. In partnerships there usually are agreements that in case of the death or retirement of one of the partners, those who remain are bound to buy the share of the outgoing man. If the sale of practices were abolished a man might be compelled to buy what had ceased to have a commercial value. With regard to the difficulties in the carrying out of partnership agreements produced by the act, the minister proposes to obtain a collective legal opinion. If there is any evidence that existing partnerships are unfairly prejudiced by the act he will seek an amendment. There is no doubt that by compromise, at which the English are known to be so adept, agreement could be reached without much difficulty on the various objections raised by the profession, except the fundamental one of the nationalization of physicians—making them salaried officials. The minister says that this is not proposed now, but that he cannot answer for future ministers of health. However, it is known that this intention is approved by the leaders of the labor party. The government is nationalizing the big industries one after another. It would like to nationalize the medical profession, but practical difficulties oblige it to proceed by steps. A very large one was taken when free medical attendance for all was provided in the National Health Insurance Act, without any opposition from the medical profession. "We are all socialists now," said a great conservative leader, the late Lord Salisbury, who certainly had no sympathy with socialism. The truth of that adage is again illustrated in the present crisis.

The council of the British Medical Association has issued a statement declaring that the decision is of the profoundest importance to the public and the medical profession. The conflict is based on the profession's conviction that the act leads unmistakably toward a whole time state medical service, which would be harmful to medicine. In the negotiations with the Minister of Health, Mr. Bevan, the representatives of the profession sought some changes, both of principle and of detail, but he refused to modify one word of the act. The council of the medical association will abide by the result of the plebiscite, as defined on the form, but its carefully considered and determined view is that the profession should not take service under the act in its present form.

The opposition of consultants and specialists to the act is just as great as that of general practitioners. In a meeting held at the house of the British Medical Association they rejected the act in its present form by a majority of 766 to 11. Among the speakers, Lord Horder appealed to his fellow consultants to halt the mad march of totalitarianism. "If we yield," he said, "to this concentration of power to one man we shall be selling our heritage and things will get worse." Mr. Dickson Wright, a surgeon, stressed that under the act the medical committees in hospitals would cease to function. Consultants whose services had established British hospitals in their preeminent position would become paid servants without a vote in their administration. A state medical service would require an army of civil servants, which would provide a good living for men who had not to spend six years in qualifying. The following resolution was proposed and carried, 766 to 11: "In the opinion of this meeting, consultants and specialists should not take service until the act has been modified and agreement reached for the good of the profession as a whole." Meetings of the staffs of the great London hospitals—Guy's, St. Bartholomew's, London, St. George's and the Great Northern—have rejected the proposed service by similar majorities, in one case unanimously.

Rejection of the National Health Service by the British Medical Association

A special meeting of the Representatives of the British Medical Association has unanimously passed a resolution that the National Health Service in its present form is so grossly at variance with the essential principles of the profession that it should be rejected absolutely by all practitioners. The *British Medical Journal* says: "Doctors are now fully alive to the implications of the Act and becoming firm in their resolve to say 'No' to a Minister whose method of negotiation is to alternate blandishments with threats in his successful attempt to avoid discussing those matters which the negotiating committee consider fundamental points of disagreement between the medical profession and the Ministry of Health. . . . The medical profession is in a strong position and should be more conscious of the fact. Its services are indispensable to the welfare of the community and will, of course, never be withheld, but it can determine the conditions of its work and insist on maintaining a framework of liberty and freedom which at the same time includes order."

In the negotiations between the medical profession and the government the three main objections to the scheme are the small basic salary for practitioners (in addition to the capitation fees), the abolition of the sale of practices within the

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service and the refusal of a right of appeal to the courts of law by a doctor dismissed from the service by an official decree. The objection to the basic salary is that it seems to be "the thin end of the wedge" of complete payment by salary, which would convert the practitioner into an official under the complete control of the government. This is the avowed policy of the labor party but has not been pressed for tactical reasons. In the words of the minister of health himself, "one does not pick fruit when it is green, one waits till it is ripe."

Research on the Common Cold

Much research on the common cold has recently been done in this and other countries. At the Royal Society of Arts Dr. C. H. Andrewes, F.R.S., of the National Institute for Medical Research, gave a lecture on the subject. He said that a few clues are now being found as to how colds are spread, what causes them, and how they can be prevented or cured. In ordinary life it is possible to catch cold from much exposure in the presence of a little virus, or from very moderate exposure in the presence of much virus. A trapper in Spitzbergen contracted a cold after contact with a center of civilization. Six weeks later he fell through the ice and his cold returned. The attitude of his fellow trappers was, "silly ass for going into town." Arctic explorers away from civilization caught no colds.

Experiments are in agreement with the idea that resistance to a cold does not depend on when one has had one's last cold but on other factors, not at all understood. Colds are commoner in winter than in summer, but in America instead of the waves of cold traveling southward from the Northern states which have cold weather soonest—the waves occur almost simultaneously from the colder Canadian border down to the Gulf of Mexico. Sudden changes in temperature might precipitate colds more readily in summer than in winter. Cold weather could perhaps act indirectly by making people crowd together indoors, but crowding hardly could be all important, otherwise why do not colds spread in rush hours in tube trains in July? In tests at Harvard Hospital, Salisbury, England, it was found that bacteria-free filtrates from sufferers from colds produced colds in about 50 per cent of subjects. The time from inoculation to onset was usually two or three days. They could store the active agent for over six months at minus 76 C. in carbon dioxide snow and still obtain "takes."

Some recent evidence suggested that more unpleasant germs were spread from the nose than from the mouth and throat, which led to the question whether bacteria and viruses accidentally shaken from handkerchiefs might not be of infective importance. Tests showed that many bacteria might be shaken out and remain in the air. Handkerchiefs used in the later stages of colds were found to be particularly effective as germ distributors. Work now in progress suggests that impregnation of handkerchiefs with a disinfectant might make them much less dangerous in this respect.

The Roentgen Examination of Emigrants

The first of two complete units of x-ray equipment brought to Britain by the Ontario government to facilitate the medical examination of prospective air migrants has been unloaded at the Northolt airport. The unloading was supervised by Dr. G. Clair Brink, director of the division of tubercular prevention, Ontario Department of Health, who was accompanied by Mr. J. S. P. Armstrong, agent general for the province. The units will be set up at the province's air emigration offices in London, England, and Glasgow, Scotland. In an interview Dr. Brink said that the equipment would not only facilitate the medical examination of emigrants but would preclude the possibility of an emigrant with active tuberculosis being separated from his family by delayed detection. Accepted emigrants and members of their families would be examined free.

ITALY

(From Our Regular Correspondent)

FLORENCE, Dec. 30, 1947.

Surgical Treatment of Pulmonary Tuberculosis

At a meeting in Naples sponsored by the Sanatorial Institute and the Association for the fight against tuberculosis, Professor Zandonini discussed the combined treatment of endocavitary aspiration and thoracoplasty. In his 9 patients treatment was limited to the use of a cannula and the procedure was not a completely closed one. In 1 patient among those treated a permanent cavity was observed after thoracoplasty, which he attributed to a persistent opening of the bronchus. Research is required, he said, for the removal of this cause of failure.

From his experience and that of others Zandonini concludes that endocavitary aspiration as a preparatory stage for thoracoplasty is the method of choice for the treatment of large cavities of the upper pulmonary lobe. This method offers the advantages of shortening the postoperative course and of providing for a much more favorable prognosis. It reduces the number and the extent of the removal of ribs.

Professor Biancalana of the University of Turin also discussed endocavitary aspiration. In contrast to collapse therapy, it aims to modify the endocavitary conditions, and those of the bronchi for drainage, which have an important part in the closure of the cavity. As yet insufficient time has elapsed to accuratcly evaluate the method or the associated technical difficulties. It took a long time and laborious adjustment for thoracoplasty to reach its present position as the principal method of collapse therapy. Endocavitary aspiration cannot compete at present with thoracoplasty and extrapleural pneumothorax, which give a recovery rate of about 75 per cent of patients so treated. But there remains a group of patients in whom, because of the grave general condition or the extent of the cavity, collapse therapy is associated with great risk. In these instances the aspiration method as initial treatment seems to be more rational. With aspiration alone one cannot obtain definite closure of a large tertiary cavity, but it is a great advance if one succeeds in reducing the cavity by means of aspiration so that permanent recovery may result from a secondary thoracoplasty or if one considers it safe to carry out surgical intervention in a patient who has first been considered inoperable. Better results have been obtained with thoracoplasty combined with aspiration when the latter was performed prior to thoracoplasty in order to disintoxicate the patient or reduce the extent of the cavity.

The technic of aspiration, which may be carried out easily in some cases, is associated with hazards which can be prevented by continuous care. The application of drainage, the apparatus and the technic, its duration and the choice of the right time for performing the thoracoplasty are all important. The speaker emphasized that the number of his cases is too small to discuss final results.

Professor Biancalana suggested that all surgeons report not only the favorable cases but also the unfavorable ones so that steady improvement could occur with a method which may help some patients, who formerly were not considered suitable subjects for collapse therapy, to be cured by thoracoplasty.

Transmission of Poliomyelitis Virus to Animals

At a meeting of the medicosurgical society of Bologna, Professor G. Salvioli discussed the susceptibility of some animals to the virus of poliomyelitis. The author stated that besides monkeys other species of animals are susceptible to the virus of acute anterior poliomyelitis; his studies at the pediatric clinic and at the antipoliomyelitis center confirm his hypothesis. The

cat was the first animal experimented on; after inoculations of various types of virus the animal presented a transmissible fatal syndrome with intestinal manifestations. A paralytic syndrome was exceptional.

According to Professor Salvioli, new fields of study may be opened. The entire epidemiology of poliomyelitis should be reviewed, because innumerable reservoirs of the virus may be considered. Professors Salvioli and Sternini submitted a report of their studies on the transmission of the virus to animals by describing the aspect of the disease in cats after inoculation with virulent material. The inoculation was made by intraventricular, intracerebral or intramucosal route with the Heine-Medin meningitic fluid, or by rectointraintestinal or duodenal route with a suspension of fecal material by means of a tube or by the parenteral route with the filtrate of the same material. For successive passages suspensions of scrapings from the intestinal mucosa or filtrates of such suspensions were employed by the intraintestinal or parenteral route, respectively.

The inoculated cat presented a fatal syndrome which was transmissible to animals. Finally there were obtained three passages with an accentuated or precipitated symptomatology, dominated by severe diarrhea associated with emaciation, asthenia, tremor and mild fever. Death occurred within a few days. These phenomena were not confirmed in controls treated with the cerebrospinal fluid or feces of normal subjects. In 2 instances flaccid paralysis of one limb was observed.

Among the few animals which survived, some were inoculated with virulent scrapings from the mucosa kept in contact with convalescent serum. This fact suggests that in the morbigenous material which has been employed there may have been present an agent which has been neutralized by the serum of subjects convalescing from poliomyelitis.

Views on Iron in Animals and in Therapy

At the Academy of Science in Ferrara, Dr. Tria discussed the distribution of iron in the organs during various periods of life and the significance of iron in relation to various physiologic conditions. The speaker discussed the recent research by Lemberg and his co-workers on the derivatives of hemoglobin with open cycle, the research of Agner on verdoperoxidase and that of Goddard on cytochrome C.

He recalled the modern views on circulating iron, with particular consideration of ferritinic iron, referring to the research by Laufberger, Tria, Kuhn, Granick and co-workers. Finally he summarized the theory by Granick on the physiologic importance of ferritin on the metabolism of iron.

Dr. Rietti discussed iron therapy, emphasizing the action of iron on hemoglobin deficiency and that of plasmatic, nonhemoglobinic iron. He also discussed certain conditions of cellular hyposiderosis characterized by changes of the skin, of its adnexa and of the mucosa which may be influenced by treatment with iron. The use of radioactive iron has opened new means for study of iron and its effect on diseases of various types.

With regard to infectious anemia, the speaker emphasized that one is not dealing with a true anemia of iron deficiency; based on his data on experimental allergy he suggested that the influence of some sensitization may explain the disturbances of metabolism of iron associated with infection.

Iron seems to have an inhibiting effect on hemolysis; there is an increase in anabolic activity in the course of exchange of pigments and a favorable influence may be exerted in some cases of hemolytic icterus with increased globular resistance, of Rietti-Greppi-Micheli type, in which the resorption and the utilization of iron may be prevented by gastric changes of mesenchymal origin.

OSLO

(From Our Regular Correspondent)

Jan. 11, 1948.

Compulsory BCG Vaccination

The most outstanding medical event in Norway last month was the adoption by the Storting of a law providing for compulsory tuberculin testing and vaccination against tuberculosis of certain groups in the community who are most in danger of this disease. This law is framed with the contingency in mind that an even more effective vaccine than BCG may ultimately be discovered. Hence the omission of any direct reference to the vaccine by name. But it is, of course, BCG vaccination for which this law provides. The Norwegian Department for Social Affairs, responsible for public health measures, has issued a comprehensive memorandum designed to initiate the country's legislators into the history of, and arguments for, this type of vaccination. A perusal of this memorandum makes it clear why this radical measure against tuberculosis encountered so little opposition in the Storting: one reads how the Norwegian public health authorities consulted everyone concerned before preparing the final draft of the law. Among other organizations in favor of it was the Norwegian Tuberculosis Doctors' Association, which in November 1946 unanimously passed a resolution in favor of compulsory BCG vaccination of youngsters at the time they left school, of conscripts and other young folk much exposed to infection.

In parts of Norway there is considerable opposition to vaccination against smallpox, whereas there is practically no such opposition to vaccination against tuberculosis. Probably this is so because smallpox is little more than a name to the man in the street, whereas everyone knows all too well what tuberculosis means. For example, in 1941, in this country with a population of only 3,000,000, there were more than 21,000 persons under the supervision of the public health authorities because they had infectious tuberculosis.

Diagnostic Possibilities of BCG

Hitherto unpublished investigations conducted at the Ullevaal Hospital by Drs. H. J. Ustvedt and A. Aanonsen suggest that BCG vaccine may be employed as a substitute for the Pirquet and Mantoux tuberculin tests. Through a drop of BCG (20 mg. in 1 cc.) applied to the skin, these investigators make two small punctures with two gramophone needles on a holder. They describe three types of reaction easily distinguished from each other. The first (nonspecific) reaction is rare, appearing in a day and usually disappearing in two or three days. Most interest centers about the second type: Beginning on the second or third day and reaching its maximum on the sixth or seventh day, it consists of a definitely infiltrated, brownish red papule 2 to 10 mm. in diameter. When this reaction is severe, the reaction to the tuberculin test is invariably positive. The third type of reaction appears on the tenth to the fourteenth day and is similar to the ordinary BCG reaction in a tuberculin-negative person.

To return to the second type of BCG reaction, the "positive early reaction," it is an example of Koch's phenomenon; it seems to be a more sensitive and specific test of an active tuberculous infection than the Mantoux test with 1 mg. of tuberculin. It is suggested that BCG thus employed is capable of distinguishing between infected and noninfected persons who are tuberculin-negative. When the Pirquet test is negative and the Mantoux test is positive, this BCG test may decide whether a positive Mantoux reaction is specific or nonspecific. For more than a year these investigations have been conducted on about 400 persons, and it is to be hoped that more will soon be heard of this new use of BCG.

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Correspondence

CUTANEOUS STAINS

To the Editor:—The suggestion by Dr. Cornbleet, "Cutaneous Stains Removed with Chemical Depilatories" (THE JOURNAL, page 573, Nov. 1, 1947), indicates that an old, convenient, reliable and safe method for removing cutaneous grime and stains is not as familiar to physicians today as it was forty years ago. It used to be, and presumably still is, also in common use by some mechanics, chemists, dyers and others whose work leaves their hands grimy and stained.

It consists of washing with a solution of potassium permanganate, rinsing with water, washing with a solution of sodium bisulfite, $Na_2S_2O_5$ (not bisulfate), and finally rinsing with water until the skin no longer feels slippery.

The potassium permanganate oxidizes the sebaceous and other loose organic matter on the skin, loosening the grime. It also oxidizes and decolorizes practically all organic dyes and pigments including merbromin ("mercurochrome"), sodium ethylmercurithiosalicylate ("merthiolate"), nitromersol ("metaphen") and gentian violet and also hair pigments. It leaves behind a brown stain of manganese dioxide which, if left alone, takes, as Dr. Cornbleet states, days to wear off.

The sodium bisulfite solution reduces the manganese dioxide and dissolves the resulting manganous oxide, leaving the skin clean and smooth. Sulfur dioxide is released in this reaction, giving a noticeable odor, but its concentration is not sufficient to be troublesome. Sodium bisulfite alone will remove iodine stains.

The method used by workmen in cleaning their hands is to pour about a teaspoonful of finely crystalline potassium permanganate into the palm of the hand, moisten it with water and rub it gently around until the hands are wholly covered with the dark brown stain. This is not a scrubbing process. It is merely a convenient method of bringing a concentrated solution into contact with the skin to be cleaned. Scrubbing is not necessary, and hard rubbing is to be avoided because the crystals, like any grit, can, if rubbed on too hard, roughen and even abrade the skin. Particular attention is paid to working the crystals under the finger nails to insure thorough cleansing.

The hands are then rinsed, and finely crystalline sodium bisulfite is applied in the same manner until the brown stain disappears. This ordinarily takes only a few minutes. If the grime and stains have not been completely removed the whole process is repeated. The final rinse until the skin no longer feels slippery removes practically all the remaining sodium bisulfite. I know of no other method which is as effective in cleaning grimy finger nails.

For stains on other body surfaces it is usually more convenient to make up the solutions and apply them by patting with a swab. On delicate skins the solutions should not be concentrated but should be diluted with an equal volume of water. The oxidation of a dye or pigment and the reduction of manganese dioxide release energy in the form of heat. If the solutions are concentrated the heat released may sometimes be sufficient to be uncomfortable on delicate skin and may even cause a temporary erythema, which may last for a day or so. This does not cause permanent damage but is preferably avoided. With dilute solutions it may be necessary to repeat the procedure several times before a stain is completely removed.

There is only one other caution necessary. If used locally on the scalp it leaves an area of bleached hair which may in some cases be more conspicuous than the stain which was removed.

Since solutions of sodium bisulfite have a p_H of about 4 to 4.7, the little that is left on the skin after the final rinse is much less likely to irritate it than the popular, much more acid, "vinegar hair rinse," with its p_H of about 2.

I have been told that if this method is used too frequently it will ultimately irritate the skin. However, I have in the past used the concentrated solutions for cleaning my hands sometimes as often as twice a day for weeks at a time with no resultant irritation.

L. B. TUCKERMAN, Washington, D. C.

COMMENT.—The practice outlined in this letter is still used by manufacturing pharmacists, chemists and other laboratorians to remove stains in the course of their work. When solutions of potassium permanganate, $KMnO_4$, (1:100) and sodium meta bisulfite, $Na_2S_2O_5$, are not at hand, they use the crystals and a little tap water receiving the same results. However, sodium thiosulfate ("hypo") is cheaper, less irritating than sodium meta bisulfite. "Hypo" is the active ingredient in iodine stain removers.—ED.

ARTERIOSCLEROSIS AND DIABETES IN YOUTHS

To the Editor:—The editorial on "Diabetes and Arteriosclerosis in Youth" (THE JOURNAL, Dec. 20, 1947, p. 1074) and the article on "The Relationship of Chronic Alcoholism to Arteriosclerosis" by S. L. Wilens, M.D. (THE JOURNAL, Dec. 27, 1947, p. 1130) bring the following to mind: In 1934, A. Feller and I reported the results of extensive studies at the International Society of Geographical Pathology in Utrecht, Belgium. The study was based on systematic vascular investigation in 1,238 postmortem examinations made at the University Hospital, University of Vienna, Austria.

It was found that diabetic persons in the higher age groups showed a considerable increase in arteriosclerosis. However, such a difference was not statistically significant in patients below 50 years of age. No difference could be found in this study between alcoholic addicts and controls, considering equal age groups, essentially confirming the findings by Dr. Wilens on a different type of population.

I might mention that in our study there was no doubt that heavy smokers aged above 50 showed a considerable increase of arteriosclerosis, both in the coronary and femoral vessels and in the aorta. Since this study was made under different circumstances, it might be of general interest.

ARTHUR J. LESSER, M.D., Los Angeles.

URETHANE IN LEUKEMIA

To the Editor:—According to J. J. Webster (THE JOURNAL, Dec. 6, 1947, p. 901) available reports on the subject of urethane in leukemia "are chiefly in the British and German journals, and represent an optimistic view as to the future of urethane therapy." As far as the original paper was concerned (Paterson, E.; ApThomas, I.; Haddow, A., and Watkinson, J. M.: *Lancet* **1**:677, 1946), it was certainly not our intention to create any impression of optimism, and we do not consider that such could in fact have been conveyed to the majority of readers. While the palliative effects of urethane were recognized as remarkably similar to those obtained by standard methods of high voltage roentgen therapy, it was on the contrary made clear that no indication had been found "that permanent benefit may result from the use of urethane in either myeloid or lymphatic leukaemia." This goes considerably further than Dr.

Webster, who believes that "urethane has been used for so short a time that the cure, of course, cannot be judged." On the contrary, we have on no occasion encountered any result approaching cure, and should consider the possibility as extremely unlikely.

A later paper by Paterson and associates (in Approaches to Tumor Chemotherapy, American Association for the Advancement of Science, 1947, p. 401) adduces evidence to show that excessive dosage of urethane may bring about serious damage to both the white and red cell series, and ends as follows:

"It must be emphasized that the . . . results provide no indication of any kind that permanent benefit may result from the use of urethane in either myeloid or lymphatic leukaemia: the action of the drug is essentially reversible, relapses take place, and immature cells may reappear in the blood. At the same time, however, it can be said that the palliative effect is in many cases very substantial. It seems probable that the greatest value of the observation lies in its very considerable scientific interest, and in the fresh opportunities which it presents us for further attack."

This seems a fair statement of the position at the moment.

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Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

BOARD OF MEDICAL EXAMINERS BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Examinations of the boards of medical examiners and boards of examiners in the basic sciences were published in THE JOURNAL Feb. 21, page 575.

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I & II.* Various centers, June 21-23. Final date for filing application is May 22. *Part II.* Various centers, April 26-27. Exec. Sec., Mr. Everett S. Elwood, 225 S. 15th St., Philadelphia 2.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Oral.* New York, April 12-15. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Oct. 18. Final date for filing application is June 1. Asst. Sec-Treas., Dr. W. A. Werrell, 1 West Main St., Madison 3, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Oral. All Groups. Part II.* Washington, D. C., May 16-22. Final date for assignment is April 1. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* Baltimore, May 20. Chicago, Oct. 6. *Written.* Various centers, Jan. 1949. Final date for filing application is July 1, 1948. Sec., Dr. S. Judd Beach, 56 Ivie Rd., Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Part II.* Chicago, January 1949. Final date for filing application is August 15. Sec., Dr. Francis M. McKeever, 1136 W. 6th St., Los Angeles 14.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, June 15-19. Sec., D. M. Lierle, University Hospital, Iowa City, Iowa.

AMERICAN BOARD OF PATHOLOGY: Philadelphia, March 8-10. Final date for filing application is March 1. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis, Mo.

AMERICAN BOARD OF PEDIATRICS: *Oral.* Cleveland, April 23-25. Chicago, June 25-27. Seattle, Sept. 10. Atlantic City, Nov. 17-19. *Written.* March 12, July 30. Sec., Miss Lea Leonard, 718 Royal Union Bldg., Des Moines, Ia.

AMERICAN BOARD OF PLASTIC SURGERY: Examinations are given in April and November of each year in the home town of applicants. Sec., Dr. Robert H. Ivy, 1930 Chestnut St., Philadelphia.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Chicago, June 1948. Final date for filing application is March 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written. Part I.* October. Final date for filing application is July 1. Sec., Dr. J. S. Rodman, 225 S. 15th St., Philadelphia.

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Malpractice: Judicial Notice of Need for Roentgenogram in Fracture Case.—The plaintiff sued for damages for injuries received as a result of a fall and as the result of the alleged malpractice of the physician in treating her therefor. From a judgment of nonsuit in favor of the physician, the plaintiff appealed to the district court of appeal, second district, division 2, California.

The plaintiff, a woman 51 years of age, slipped and fell, landing heavily on her right hip. She called the defendant physician, was advised that he was out of the city and was taken instead to the Hollywood Receiving Hospital, and then to her hotel. The next morning she again called the defendant physician. He replied that he had received a report from the Receiving Hospital that she was just bruised and that it was not necessary for him to visit her. He prescribed "anacin," rest and hot baths and told her to call him the following morning. Two days later she again telephoned the defendant physician, told him that she was still in great pain and asked him if he did not think he should come over to see her. He replied in the negative, stating that a bruise was often more painful than break. About a week after the accident, while leaning against a dressing table, the plaintiff's right ankle turned over and she heard her hip bone crack. The house physician in her hotel caused her to be removed to the Cedars of Lebanon Hospital, where roentgenograms were taken, and she was later transferred to the California Hospital, where the defendant physician finally called in person to see her. She told him that the members of the staff at Cedars of Lebanon Hospital thought that her hip was broken, but the defendant physician still adhered to his original diagnosis. Two days later, however, he told her that he had examined the roentgenogram taken at Cedars of Lebanon Hospital and that her hip was broken. Additional roentgenograms were then taken, her leg was placed in a cast and she was hospitalized for twelve weeks. Although the plaintiff was still suffering pain in her hip nine months after the accident, the defendant physician told her that she was not suffering from any necrosis and that the pain was caused by arthritis or neuritis.

It was the defendant's contention that these facts were not sufficient to make out a prima facie case in favor of the plaintiff, since there was no expert medical testimony indicating that the defendant had failed to use the required degree of skill and learning.

The appellate court said that the law requires a physician to have and exercise that degree of skill and learning ordinarily possessed and exercised by physicians of good standing practicing in the same locality. Furthermore, whether or not the physician has done so in a particular case is a question for experts and can be established only by their testimony. To this general rule, however, the court continued, there is a well recognized exception, to wit, where the question of the propriety of a treatment is a matter of common knowledge to laymen, expert testimony is unnecessary in order to establish liability in a malpractice case. The use of roentgen rays as an aid to diagnosis in cases of fracture or other indicated cases, said the court, is a matter of common knowledge of which the court, in the absence of expert testimony, may take judicial notice. When the plaintiff fell, said the appellate court, a possible fracture was indicated, and under the foregoing rules it was a matter of common knowledge, of which the trial court should have taken judicial notice, that the ordinary physician in good standing in this community in the exercise of ordinary care and diligence would have had roentgenologic pictures taken of the plaintiff's body. In failing to do so the defendant did not exercise the degree of learning and skill ordinarily possessed by physicians of good standing practicing in this community. No expert testimony was needed. Accordingly the judgment of nonsuit in favor of the defendant physician was reversed.—*Agnew v. City of Los Angeles, 186 P. (2d) 450 (Calif., 1947).*

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Current Medical Literature

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in continental United States and Canada for a period of three days. Three journals may be borrowed at a time. Periodicals are available from 1938 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted.

Alabama State Medical Assn. Journal, Montgomery

17:153-176 (Nov.) 1947

Part That the Doctors of State Medical Association Have Played in Development of Public Health in Alabama. W. K. Sharp Jr.—p. 153.
Diagnosis and Treatment of Addison's Disease. E. H. Planck.—p. 157.
Hidrosadenitis Suppurativa: Report of 2 Chronic Cases Treated by Surgical Excision. R. G. Goodall.—p. 159.
Acute Postpartal Heart Failure: Report of 4 Cases with an Inquiry Into Pathogenesis. A. M. Freeman.—p. 163.

17:177-212 (Dec.) 1947

Colostomy. J. G. Vance.—p. 177.
Cancer of Mouth. J. D. Peake.—p. 183.
Lung Abscess. C. J. Donald Jr.—p. 185.

American Journal of Hygiene, Baltimore

46:297-411 (Nov.) 1947

Comparison of Calculated and Determined Calorie and Vitamin Contents of Mixed Diets. Margaret M. Kaser, Ruth C. Steinkamp, W. D. Robinson and others.—p. 297.
Interepidemic Studies on Arthropod-Borne Virus Encephalitides and Poliomyelitis in Kern County, California, and Yakima Valley, Washington, 1944. Rate of Asymptomatic Malarial Infection in White and Negro Service Troops Taking Suppressive Atabrine. W. Trager.—p. 336.
Difference in Dissemination of Virus of Japanese B Encephalitis Among Domestic Animals and Human Beings in Japan. A. B. Sabin, D. R. Ginder and M. Matumoto.—p. 341.
Japanese B Encephalitis in American Soldiers in Korea. A. B. Sabin, R. W. Schlesinger, D. R. Ginder and M. Matumoto.—p. 356.
Relation of Oil Treatment of Floors and Bedding to Control of Respiratory Diseases Among Naval Personnel. I. L. Shechmeister and F. S. Greenspan.—p. 376.

Anesthesiology, New York

8:567-679 (Nov.) 1947

Planning the Operating Room. E. T. Wheeler and W. H. Cassels.—p. 567.
Further Studies on Production of Cyclopropane-Epinephrine Tachycardia. J. W. Stutzman, Q. Murphy, C. R. Allen and W. J. Meek.—p. 579.
*Nupercaine in Dilutions Greater Than 1:1,500 for Spinal Anesthesia. A. J. Fisher and R. J. Whitacre.—p. 584.
Median Lethal Dose (LD_{50}) of Pentothal Sodium for Both Young and Old Guinea Pigs and Rats. E. B. Carmichael.—p. 589.
Hydrogen Ion Concentration of Spinal Fluid and Its Relation to Spinal Anesthetic Failures. E. N. Cohen and R. T. Knight.—p. 594.
Variations in Signs of Acute Oxygen-Want During Anesthesia. C. R. Allen, R. S. Echols, E. A. Hoeflich and others.—p. 601.
Ethyl-Normal-Propyl Ether: Satisfactory General Anesthetic Agent for Intranasal Surgery. H. R. Griffith and E. J. MacLeod.—p. 615.
Application of New Piperidine Derivative to Spinal Anesthesia: Preliminary Report. G. H. Finer and E. A. Rovenstine.—p. 619.
Anaphylaxis and Anesthesia: Preliminary Report. H. Carron.—p. 625.
Clinical Observations on N-Propyl Methyl Ether. S. Rochberg.—p. 637.

Dilutions of "Nupercaine" in Spinal Anesthesia.—In an effort to evaluate the clinical effects of dibucaine hydrochloride ("nupercaine hydrochloride") in dilutions greater than 1:1,500, Fisher and Whitacre used concentrations varying from 1:2,000 to 1:10,000 in 1,124 cases, of which all but 61 involved intra-abdominal operations. It was desired to determine the weakest effective dilution necessary to produce anesthesia and to observe whether high dilutions decreased the toxicity of dibucaine. The use of the higher dilutions of the drug for spinal anesthesia indicated that the concentration of the drug did not appreciably alter the degree or duration of sensory anesthesia or motor block. Likewise, the incidence and severity of circulatory reactions were not decreased by the use of dilute solutions of dibucaine. It appears that the toxicity of dibucaine in spinal anesthesia is dependent primarily on the amount rather than the dilution of the drug. There is little or no advantage in using concentrations of dibucaine less than those ordinarily recommended for spinal anesthesia.

Annals of Surgery, Philadelphia

126:633-840 (Nov.) 1947

*Subtotal Gastrectomy for Gastric Ulcer: Study of End Results. H. K. Ransom.—p. 633.
Effect of Vagotomy on Human Gastric Function: Preliminary Report. A. M. Schoen and R. A. Griswold.—p. 655.
Vagus Resection for Ulcer; An Interim Evaluation: II. Clinical Results. F. D. Moore.—p. 664.
Study of Results, both Favorable and Unfavorable, of Section of Vagus Nerves in Treatment of Peptic Ulcer. W. Walters, H. A. Neibling, W. F. Bradley and others.—p. 679.
Section of Vagus Nerves to Stomach in Treatment of Peptic Ulcer: Complications and End Results After Four Years. L. R. Dragstedt, P. V. Harper Jr., E. B. Tovee and E. R. Woodward.—p. 687.
Abdominal Visceral Sensation in Man. B. S. Ray and C. L. Neill.—p. 709.
*Role of Pinealomas in Causation of Diabetes Insipidus. G. Horrax.—p. 725.
*Treatment of Focal Epilepsy by Cortical Excision. W. Penfield and H. Steelman.—p. 740.
Urgent Surgery in the Aged. G. W. Cutler Jr.—p. 763.
Experiences in Surgical Treatment of Multiple Visceral Neoplasms. A. Brunschwig and P. W. Schafer.—p. 780.
Resection and Primary Anastomosis in Treatment of Gangrenous or Non-Reducible Intussusceptions in Children: Safe, Simple, One-Layer Silk Anastomosis. C. Dennis.—p. 788.
Mediastinal Aberrant Goiter. J. D. Rives.—p. 797.
Inflammatory Obliteration of Common and Hepatic Ducts Following Cholecystectomy. H. F. Graham.—p. 811.
Appendiceal Stump. G. H. Yeager.—p. 814.
Talcum Powder Granuloma: Frequent and Serious Postoperative Complication. B. Eiseman, M. G. Seelig and N. A. Womack.—p. 820.
Suspension Operation for Prolapse of Rectum. T. G. Orr.—p. 833.

Subtotal Gastrectomy for Gastric Ulcer.—Difficulties in differential diagnosis prompted some authors to take the position that gastric ulcer, unlike duodenal ulcer, is primarily a surgical problem. Other writers question the propriety of such a radical attitude, especially with regard to gastric resection. Ransom analyzes his experience of a twenty year period, during which 1,356 patients with gastric ulcer were treated. Of this number, 246 patients required surgical intervention. Twenty patients had acute perforation. Elective surgical procedures were performed in 226 cases. The more conservative operations such as gastroenterostomy have declined. Partial, subtotal or total gastrectomies were performed in 188 cases. Gastric resection has limitations. For patients who are exceedingly obese, who are poor risks or who have high or inaccessible lesions, a less ideal but safer procedure should be selected. With the advent of vagus interruption a new method is available for this group of patients. Subdiaphragmatic vagotomy may be worth while at the time of subtotal gastrectomy in an attempt to prevent jejunal ulcer. The conventional subtotal resection whereby a large portion of the lesser curvature as well as the antrum and pylorus were removed, has given best results in this series. Little difference has been noted in the late results between cases in which a Polya or a Hoffmeister reconstruction was performed and the clinical results of antecolic and retrocolic anastomoses. The Finsterer exclusion operation should be abandoned. The record of results in the 3 total gastrectomies is not good. Although there was 1 excellent result, there was 1 operative death and 1 poor result. The procedure seems much too radical for the treatment of a benign ulcer. The fact that microscopic study revealed cancer in 10 per cent of the lesions, which was not recognized at the time of laparotomy, would indicate that indirect operation for gastric ulcer should be accepted with caution. There is a place for medical treatment in the management of certain gastric ulcers, but its dangers and limitations should be realized.

Pinealomas as Cause of Diabetes Insipidus.—Horrax says that whereas the occurrence of diabetes insipidus in patients with pituitary tumors or other lesions in the suprasellar or chiasmal region was easily understood, the occasional report of polydipsia and polyuria in patients with tumors arising from the pineal body, which is so far removed from the supposed source of diabetes insipidus, was incapable of explanation until Stringer in 1934 studied a patient coming to necropsy and found, in addition to a small pinealoma replacing the pineal body, a

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solitary implant confined to the tuber cinereum of the hypothalamus. Diagnosis of pinealoma has been made in 17 instances in his brain tumor series during the past fourteen years. Of these 17 patients, 5 had diabetes insipidus. In 2 of the patients the pineal tumor has been histologically verified and in the 3 other patients the tumor has been demonstrated by neurologic and ventriculographic evidence. In 1 patient (case 1) the tumor cells were shown microscopically to have invaded the hypothalamus and posterior lobe of the pituitary body, thus involving the tract of nerve fibers whose interruption has been shown to be responsible for diabetes insipidus. In case 2 the growth was an ectopic pinealoma in the suprasellar region, obviously compressing the area in question. When the tumor was removed the polyuria was greatly lessened. In the 3 patients whose tumors have been depicted by ventriculography a similar invasion of this tract, as in case 1, seems probable. These 3 patients have received roentgen treatment. In 2 patients the rays were directed not only at the pineal region but also to the suprasellar area, which included the hypothalamic region as well. Their general condition has remained excellent for six and one-half to fourteen years following roentgen therapy. The diabetes insipidus has been considerably relieved in 1 and probably in 2 of these patients. It is possible that the water imbalance may persist, because partial interruption of the nerve tract from hypothalamus to pituitary is permanent even though the tumor cells originally causing this interruption have been destroyed by the roentgen rays.

Cortical Excision in Focal Epilepsy.—Penfield and Steelman show that excision of partially damaged convolutions adjacent to meningocerebral scars or in areas of cerebral atrophy has proved to be an effective treatment of epilepsy. Seventy-six patients submitted to operation. One patient died as a result of the operation. Of the 59 patients who had excision, 15 had no further attacks and 18 had one or two seizures but considered themselves cured or practically so. Of the 16 craniotomies without excision, none were successful. It therefore seems that removal of adhesions, decompression or closure of cranial defects have no effect on the attacks unless the proper excision is carried out. The best results from excision were obtained in the birth injury group. Infectious processes came next and head injury third. Removals in the frontal pole were most successful, and the central (or sensorimotor) cortex came next. When attacks recur early after operation and if the pattern is the same as preoperatively, an immediate second operation should be considered. The persistence of a spike electrographic focus after operation or the appearance of marked delta electrographic activity near the site of removal should cause the surgeon to consider reoperation. In preoperative studies, the simpler the electrographic record is and the better it is localized, the better the prognosis of a successful excision. A well localized, simple electroencephalogram, not supported by pneumographic or other evidence, has sometimes led to a useless exploration. The surest guide to localization of an epileptogenic zone is the seizure pattern. The greatest supplementary help is electrographic study. Radical excision seems to offer a reasonable possibility of cure to those who have cortical foci of discharge and whose attacks are not controlled by medicaments.

Annals of Western Medicine & Surgery, Los Angeles

1:411-452 (Dec.) 1947

Problem of Mental Hospital Construction in Los Angeles County. W. R. Rosanoff and G. N. Thompson.—p. 411.
Rheumatoid Arthritis: Advances in Therapy. B. L. Wyatt.—p. 416.
*Prostigmine Therapy in Paralysis. E. L. Coodley.—p. 425.
*Treatment of Subacute Bacterial Endocarditis with Penicillin. L. Hyde and B. Hyde.—p. 429.

"Prostigmine" in Paralysis.—Coodley administered neostigmine methylsulfate in a strength of 1:2,000 to 48 patients with paralysis of varying duration. The daily dose was 1 ampule (0.5 mg.) administered intramuscularly with atropine sulfate, grains 1/150 (0.4 mg.). The drug is theoretically indicated because of its effect of neutralizing cholinesterase, thus preventing the breakdown of acetylcholine at the myoneural junction and facilitating the passage of nerve impulses at this point. There is evidence to suggest that neostigmine also acts centrally. The toxic effects of therapy were negligible. There was no correlation between the type of lesion and the therapeutic results. There was a positive correlation between the duration of lesions and responsiveness to therapy. Subacute lesions, those between three and six months, responded to neostigmine therapy; chronic lesions of over six months' duration showed little response. Neostigmine is not a panacea, and partial and complete failures must be expected.

Penicillin in Subacute Bacterial Endocarditis.—The Hydes report 4 patients with subacute bacterial endocarditis caused by Streptococcus viridans who responded to penicillin therapy and are well and asymptomatic. In each case the organism isolated from the blood was found to be sensitive to penicillin in vitro. The daily dose of penicillin received by these patients varied because of the opinions of the individual physicians. The authors believe that at least 500,000 units of penicillin daily for four to six weeks would appear to be effective. A patient not responding should be given a larger daily dose of penicillin over a longer period of time. The first patient received 1,000,000 units every three hours and a total dose of 106,000,000 units.

Archives of Dermatology and Syphilology, Chicago

56:559-714 (Nov.) 1947

Howard Fox—A Leader in Medicine and A Great Dermatologist. P. E. Bechet.—p. 560.
Coal Tar in Dermatology: An Improvement in Its Physical Properties Without Change in Its Therapeutic Action. F. C. Combes.—p. 583.
Acne Rosacea: Vitamin B Complex Deficiency. L. Tulipan.—p. 589.
Occupational Pigmentary Changes in Skin. L. Schwartz.—p. 592.
Propionate-Caprylate Mixtures in Treatment of Dermatomycoses with Review of Fatty Acid Therapy in General. S. M. Peck and W. R. Russ.—p. 601.
*Sulfapyridine in Treatment of Dermatitis Herpetiformis. M. J. Costello.—p. 614.
Psoriasis of Hands: Nonpustular Type. M. R. Caro and F. E. Senear.—p. 629.
*Relation Between Thiamine and Arsenical Toxicity: Preliminary Report. G. B. Sexton and C. W. Gowdey.—p. 634.
Myoblastoma: Report of Case of Myoblastoma of Lip Followed by Multiple Tumors of Skin. D. Bloom and A. M. Ginzler.—p. 648.
Sarcoid of Boeck in Negro. S. Irgang.—p. 659.
Cosmetic Dermatology: Alkalinity of Face Powder Mixtures. H. Sharlit.—p. 666.
Pseudoepitheliomatous Hyperplasia Due to Granuloma Inguinale. O. S. Philpott.—p. 669.
Dermatitis Venenata Due to Streptomycin. O. Canizares and H. Shatin.—p. 676.
Contact Eczematous Dermatitis and Patch Tests: Histologic Study. C. S. Miller.—p. 678.
*Suppression of Treponemicidal Action of Arsenic with 2,3-Dimercaptopropanol (BAL): Report of Clinical Observations in 5 Cases. G. A. De Oreo.—p. 695.
Observations on Spinal Fluid in Lymphogranuloma Venereum. W. Leifer.—p. 699.

Sulfapyridine in Dermatitis Herpetiformis.—A questionnaire sent to the members of the American Dermatological Association to determine the present status of sulfapyridine in the treatment of dermatitis herpetiformis revealed that the sulfonamide drugs are of value in the treatment of that disease. Sulfapyridine is the most effective sulfonamide drug in the treatment of this dermatosis. The average initial daily dose of sulfapyridine for this disease is 1 Gm. three times a day, and the average maintenance dose is 0.5 Gm. three times a day. Twelve per cent of the physicians who had experience with the sulfonamide drugs in the treatment of dermatitis herpetiformis had patients who were cured with this form of treatment. All those who had experience with the sulfonamide drugs in this disease stated that, on the average, 80 per cent of the patients had improved to the extent that they were free of symptoms. The physical and mental suffering caused by this chronic pruritic vesiculobullous disease warrants the risk of administration of sulfapyridine. Patients should be apprised of the risk involved. Sulfapyridine has been administered in maintenance doses from three months to seven years with apparent safety. Opinion is equally divided regarding the advantages of continued and interrupted treatment. Mild toxic reactions are frequent. Severe toxic reactions are rare if blood cell counts and urinalyses are made at frequent intervals. Copious intake of fluid and alkali therapy reduce the incidence of these reactions. Penicillin is less effective than the sulfonamide drugs in dermatitis herpetiformis. The antihistaminic drugs are probably an adjuvant to the sulfonamide drugs.

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Thiamine and Arsenical Toxicity.—Sexton and Gowdey say that their interest in the relation between thiamine and arsenical toxicity was stimulated in 1943 by the rapid remarkable recovery of a patient in Victoria Hospital, in whom peripheral neuritis and suspected arsenical encephalopathy had developed during the course of the five day drip treatment and after parenteral administration of massive doses of thiamine hydrochloride. The literature revealed that there was an amazing similarity between arsenical encephalopathy and acute vitamin B_1 deficiency. The authors report experiments on animals and observations on patients in whom extensive five day drip arsenical treatment was given. They found that oxophenarsine hydrochloride causes a significant derangement in carbohydrate metabolism, as evidenced by increased pyruvic acid and sugar in the blood. The high level of pyruvic acid suggests that catabolism is stopped at the level of pyruvic acid. This is directly related to the functioning level of thiamine, since a deficiency of the coenzyme containing thiamine produces a high level of pyruvic acid. A sudden rise in the level of pyruvic acid, coinciding with greatly increased muscular sensitivity and rising temperature, is experimental evidence of a reaction of severe toxicity. In a reaction seriously involving the central nervous system vitamin B_1 and 2,3-dimercaptopropanol (BAL), if they are to be used therapeutically, must be given early, before the reaction has gone beyond the irreversible pathologic lesion. Five cases of acute arsenical intoxication are described. In all 5 the level of pyruvic acid was high throughout the course of the drip and the curves portraying this high level of pyruvic acid were all of the same general shape. It would seem that 2,3-dimercaptopropanol and vitamin B_1 in adequate dosage should be complementary in the treatment of arsenical encephalopathy. Administration of vitamin B_1 insures the functioning at peak levels of the cellular enzyme systems not affected by the arsenical. When the usefulness of vitamin B_1 has been exceeded, then BAL may be used to inactivate the arsenical, though this means the loss of its spirocheticidal effect. A high level of pyruvic acid accompanied with clinical signs of subacute B_1 avitaminosis should warrant treatment other than intensive arsenotherapy.

Treponemicidal Action of Arsenic and BAL.—De Oreo treated 5 patients who had acute early syphilis with 2,3-dimercaptopropanol, or BAL, and oxophenarsine hydrochloride in an attempt to determine whether BAL effected a depressing action on the treponemicidal factor of arsenic. In 3 cases the destruction of Treponema pallidum was delayed (long after the time normally required with standard treatment) by the use of BAL. In cases 2 and 5 organisms were still present after three and one-half days of injections of combined arsenic and 2,3-dimercaptopropanol. In case 1 T. pallidum persisted for eight days. In one case the T. pallidum quickly disappeared from the lesion following the withholding of one injection of BAL. In another case, in which BAL and oxophenarsine hydrochloride were given simultaneously, there appeared to be no diminution of the treponemicidal action of oxophenarsine hydrochloride; however, based on the other observations it is thought that this was probably due to the different routes of administration of the two drugs, inasmuch as the arsenical was given intravenously, thus allowing for much faster dissemination. Adequate doses of 2,3-dimercaptopropanol have a suppressive effect on the treponemicidal action of arsenic.

Archives of Ophthalmology, Chicago

38:577-734 (Nov.) 1947

Postoperative Complications of Cataract Extraction. W. F. Hughes Jr. and W. C. Owens.—p. 577.
Macular Hole with Extensive Peripheral Detachment of Retina. A. Rados. —p. 596.
Tenotomy of Superior Oblique Muscle for Hypertropia: Preliminary Report. R. N. Merke.—p. 605.
Iontophoresis with Contact Lens Type and Eyecup Electrodes: Some Points of Theory and Technic of Ion Transfer. E. Selinger.—p. 645.
Neurofibromatosis Iridis (Recklinghausen's Disease). K. Unger.—p. 654.
Use of Air Injections into Tenon's Capsule for Localization of Orbital Foreign Bodies. B. Friedman.—p. 660.
Use of Absorbable Corneoscleral Sutures in Cataract Surgery. Report of 76 Cases. L. J. Alger.—p. 665.
Solutions Used with Contact Lenses. T. E. Obrig.—p. 668.
Spontaneous Luxation of Eyeball. G. L. Miller, A. Schlossman and W. H. Boyd.—p. 677.

Archives of Otolaryngology, Chicago

46:575-734 (Nov.) 1947

*Tonsillectomy and Poliomyelitis. D. S. Cunning.—p. 575.
Healing of Experimental Labyrinthine Fistulas: Further Observations. J. R. Lindsay.—p. 584.
Dislocation of Septal Cartilage. S. Cohen.—p. 601.
*Congenital Atresia of Esophagus with Tracheoesophageal Fistula: Report of 6 Cases. J. A. Perrone, W. H. Fleming and T. R. Whitaker. —p. 608.
Contact Ulcer of Larynx: II. Role of Vocal Reeducation. Georgiana Peacher and P. Holinger.—p. 617.
Effect of Typical Nasal Plastic Correction on Facial Expression. B. L. Griesman.—p. 624.
Intranasal (Sphenopharyngeal) Encephalocele: Report of Case with Intracranial Repair and Review of Subject. F. M. Anderson.—p. 644.
Osteoma of Frontal Sinuses. J. N. Novick.—p. 655.
Different Treatment of Chronic Purulent Otitis Media: Deep Lavage, Aeration and Application of Gold Foil Membrane Bearing Ointment of Scarlet Red. M. Unger.—p. 670.
Allergy. E. L. MacQuiddy and R. E. King.—p. 686.

Tonsillectomy and Poliomyelitis.—At the May 1946 meeting of the American Laryngological, Rhinological and Otological Society it was suggested that a nationwide survey be carried out with regard to the relationship of tonsillectomy and poliomyelitis. Each section chairman of the society was to appoint one or more members from each state to gather pertinent information for a statistical report. Some members made no report; the reports of others were so sketchy and incomplete as to be useless. Of 6,000 questionnaires received, almost 4,000 had to be discarded. Although this study cannot settle conclusively the problem whether surgeons should avoid removing tonsils during epidemics of poliomyelitis, certain valuable evidence has resulted. One table shows that 4.7 per cent of the cases of bulbar involvement were preceded by tonsillectomies, while only 1.9 per cent of the cases of spinal involvement followed recent tonsillectomies. Not much importance can be placed on the interpretation because of the inadequacy of the original data and the lack of comparative values. Tonsillectomies are performed usually in the summer months, not entirely as a matter of convenience to the surgeons or the children. The summer months, with their low incidence of respiratory infections, offer the ideal time for such a procedure. If the present practice of summer tonsillectomies is to be changed because of fear of poliomyelitis, then the dangers of respiratory infections will substantially increase. To incur that increased risk, laryngologists must have proper justification. Cunning also points out that the majority of tonsillectomies are not elective. Most of them are necessary surgical procedures, performed in the interest of preventive medicine. Infected tonsils are possible etiologic foci for nephritis, mastoiditis, infection of the middle ear, rheumatic fever and many other debilitating diseases. For the full protection of his patient, the surgeon, before postponing an indicated tonsillectomy, must weigh the dangers and the chances of the contraction of any of these diseases as well as the dangers and the chances of poliomyelitis. The author urges that another study be made to answer the question whether children on whom tonsillectomy is performed during the summer months are more likely to contract poliomyelitis than are nontonsillectomized children.

Congenital Atresia of Esophagus.—Perrone and his associates point out that the prognosis of esophageal atretic defects is fatal unless some surgical intervention is accomplished which will prevent pneumonia and starvation, the two primary causes of death. The authors present the histories of 6 patients with congenital atresia of the esophagus who have been observed at the Mercy Hospital in Pittsburgh between 1939 and 1945. Excessive mucus in the mouth and throat was a symptom in all these infants. An example of the dangers of the use of barium sulfate for diagnostic purposes is seen in case 1, in which death occurred soon after barium sulfate had been permitted to enter the bronchi. Iodized oil should be used in preference to barium sulfate, since complications resulting when oil is instilled into the lungs are much less severe than those resulting when barium sulfate enters these organs. The first 3 cases of this series show the necessity of an early closing of a fistula connecting the lower esophageal segment with the trachea. In these 3 cases

the gastric contents were constantly being regurgitated upward into the trachea, causing fatal pneumonia. Too frequently the patient is treated for the pulmonary complications for an extended period, and the primary cause of the symptoms is overlooked, as in cases 3 and 6 of this series. Frequently, in view of the regurgitation of feedings, the patient is suspected of having pyloric stenosis, but this confusion should not exist too often. All 6 patients died.

Bull. of U. S. Army Med. Dept., Washington, D. C.

7:911-988 (Nov.) 1947

Laboratory Observations on Antibiotics. M. Levine and A. R. Thomas Jr.—p. 922.
Psychoneurosis in the Armed Forces. E. D. Fisher.—p. 939.
Early Definitive Treatment of Fractures of Femur. J. J. Cawley Jr., C. Abell and H. Freele.—p. 948.
Bovine Brucellosis in Germany. F. A. Todd.—p. 953.
Preparation of Japanese Encephalitis Vaccine. J. E. Smadel, R. Randall and J. Warren.—p. 963.
Trichinosis in Prisoners of War. W. A. Davis and R. R. Cleland. —p. 973.

7:989-1071 (Dec.) 1947

Intravenous Administration of Atabrine in Falciparum Malaria. T. E. Machella, L. J. Kimmelman and R. A. Lewis.—p. 1009.
Surgery of Thyroid. L. W. Sloan.—p. 1022.
Spot Plate Test for Ascorbic Acid. H. A. Risley, J. F. Thompson, J. S. Roth and others.—p. 1030.
Effectiveness of Forward Neuropsychiatric Treatment. A. J. Glass. —p. 1034.
Pulp Canal Therapy and Apicoectomy. C. A. Emery.—p. 1042.
Dermatologic Problems in an Army Hospital. T. H. Finkle.—p. 1047.

Journal of Bacteriology, Baltimore

54:549-669 (Nov.) 1947. **Partial Index**

Studies on Polymyxin: Isolation and Identification of Bacillus Polymyxa and Differentiation of Polymyxin from Certain Known Antibiotics. P. G. Stansly and M. E. Schlosser.—p. 549.
Plate Methods for Testing Antibiotic Activity of Actinomycetes Against Virulent Human Type Tubercle Bacilli. Elizabeth H. Williston, Pari Zia-Walrath and G. P. Youmans.—p. 563.
Morphologic Variant of Escherichia Coli and Its Resistance to Streptomycin. Esther Stubblefield.—p. 569.
Isolation of Type B Botulinum Toxin. C. Lamanna and H. N. Glassman.—p. 575.
Studies on Polymyxin: An Agar Diffusion Method of Assay. P. G. Stansly and M. E. Schlosser.—p. 585.
Further Studies on Immunization of Rabbits to Toxigenic Corynebacterium Diphtheriae by Injections of Nontoxigenic Diphtheria Bacilli. M. Frobisher Jr. and Elaine L. Undyke.—p. 609.
*Study of Bacterial Synergism with Reference to Etiology of Malignant Diphtheria. Elaine L. Undyke and M. Frobisher Jr.—p. 619.
Effect of Sodium Acenaphthene(5)Sulfonate on Strain of Eberthella Typhosa. T. H. Grainger Jr. and Dorothy L. Wilmer.—p. 633.
Initial Body and Plaque Form in Chlamydozoaceae. G. Rake.—p. 637.
Relative Errors of Bacteriologic Plate Counting Methods. T. L. Snyder. —p. 641.
Cultural Studies on Yeastlike Phase of Histoplasma Capsulatum Darling. S. B. Salvin.—p. 655.

Etiology of Malignant Diphtheria.—Undyke and Frobisher investigated the etiology of malignant diphtheria with reference to the possibility of a synergistic action between Corynebacterium diphtheriae and hemolytic streptococci or other organisms. Two experimental procedures were employed: (1) intraperitoneal inoculation into mice of combinations of living cultures of homologous pairs (both organisms isolated from the same case of malignant diphtheria) of C. diphtheriae and beta streptococci and (2) intracutaneous inoculation into rabbits of diphtheria bacilli or toxin in combination with living cultures of various organisms. In the experiments with mice, deaths occurred in greater numbers and in a shorter time among those animals receiving combinations of sublethal doses of diphtheria bacilli and streptococci than among those receiving the same dose of either organism alone. This was at first interpreted as indicative of a synergistic action between the two organisms. However, it was found that the volume or quality of nutrient material or inert particles, or both, in the inoculum has a decided effect on the lethality of streptococci for mice. The experiments with rabbits in which nonspecific factors in the inoculums were controlled revealed no reactions that could be attributed to synergism between diphtheria toxin and one or more strains of thirty-two different bacteria. The problem of the etiology of malignant diphtheria is as yet unsolved.

Journal of the Mount Sinai Hospital, New York

14:849-890 (Nov.-Dec.) 1947

Treatment of Epilepsy. H. H. Merritt.—p. 849.
Physiologic Therapy in Diseases of Respiratory System. A. L. Barach.—p. 857.
Tumors of Twelfth Nerve: Report of 2 Cases. B. J. Bernstein and A. I. Goldfarb.—p. 864.
Spread of Infection from Face and Jaws: Anatomic Considerations. H. H. Shapiro.—p. 874.
Phlegmon of Floor of Mouth: (Ludwig's Angina). G. P. Seley. —p. 880.
Spread of Infection from Jaws to Submaxillary Region: Clinical Considerations. L. Stern.—p. 884.

Journal of Nervous and Mental Disease, New York

106:415-512 (Oct.) 1947

Pathways of Tectum (Anterior Colliculus) of Midbrain in Cats. O. Marburg and F. J. Warner.—p. 415.
Objective Method of Recognizing Biophysical Artefacts in Electro-Encephalogram. J. W. Thiesen.—p. 447.
Electro-Encephalogram in Epileptic Patients Aged Five to 80 Years. L. J. Robinson and R. G. Osterheld.—p. 464.
Processes of Expectation and Anticipation: Their Genetic Development, Neural Basis and Role in Psychopathology. S. Arieti.—p. 471.
Psychiatric Realities: Analysis of Autistic Trends in Psychiatric Thinking. F. A. Freyhan.—p. 482.
Case of Neuronitis Simulating Muscular Dystrophy. P. R. Apffel. —p. 493.

Journal of Neurophysiology, Springfield, Ill.

10:383-446 (Nov.) 1947. **Partial Index**

Small Nerve Motor System to Skeletal Muscle. S. W. Kuffler and R. W. Gerard.—p. 383.
Further Observations on Spreading Depression of Activity in Cerebral Cortex. A. A. P. Leão.—p. 409.
Tectal and Bulbopontine Eyelid Reflexes and Mechanism of Sleeping Attitude of Acute Thalamic Pigeon. G. Moruzzi.—p. 415.
Mechanism of Nerve Conduction Block Produced by Anticholinesterases. J. E. P. Toman, J. W. Woodbury and L. A. Woodbury.—p. 429.

Journal of Pharmacology & Exper. Therap., Baltimore

91:195-305 (Nov.) 1947. **Partial Index**

Studies in Analgesia: Piperidine Derivatives with Morphine-Like Activity. R. H. K. Foster and Arlueen J. Carman.—p. 195.
Absorption and Renal Excretion of Tetraethylammonium Ion. Barbara R. Rennick, G. K. Moe, R. H. Lyons and others.—p. 210.
*Influence of Various Substances on Chronic Selenium Poisoning. Irene Rosenfeld and O. A. Beath.—p. 218.
Toxicity and Pharmacologic Action of Nitrogen Mustards and Certain Related Compounds. W. P. Anslow Jr., D. A. Karnovsky, B. V. Jager and H. W. Smith.—p. 224.
Antagonism of Curare Action by Neostigmine, Physostigmine, Ephedrine and Di-Isopropyl Fluorophosphate (DFP). H. F. Chase, J. L. Schmidt and B. K. Bhattacharya.—p. 236.
Estimation of 4'-Carboxyphenylmethane Sulfonanilide (Caronamide) in Biologic Fluids. B. B. Brodie, Betty Levy and Eleanore Bernstein. —p. 246.
Effect of Carbon Tetrachloride Liver Damage in Rabbit and Rat on Acetylcholine Esterase Activity. S. Ellis, Shirley Sanders and O. Bodansky.—p. 255.
4'-Carboxyphenylmethanesulfonanilide (Caronamide): Its Toxicologic Effects. K. H. Beyer, S. E. McKinney, Elizabeth K. Tillson and C. W. Green.—p. 263.
Effects of Caffeine and Theobromine Derivatives on Oxygen Consumption of Muscle. C. L. Gemmill.—p. 288.

Selenium Poisoning.—Rosenfeld and Beath say that inasmuch as selenium contaminates grains and vegetables consumed by human beings as well as livestock the factors which influence selenium poisoning merit consideration. After citing studies from the literature which indicate that dietary factors can reduce and the addition of other chemicals can enhance or decrease the toxicity of selenium, the authors describe studies on the influence of ascorbic acid, beet pectin and potassium iodide on chronic selenate and selenite poisoning. Various amounts of ascorbic acid given by mouth to rats receiving a constant amount of sodium selenite (0.15 mg. selenium) daily did not protect the organs from injury or prevent the development of ascites. The intraperitoneal injection of 28 mg. of potassium iodide daily increased the toxicity of selenate and selenite forms of the element. The daily administration of beet pectin prevented the development of ascites in all but 1 animal during the experiment (eighty days). In animals which were living at the termination of the experiment, however, ascites gradually developed two months after the administration of selenium and pectin was discontinued. Beet pectin did not give complete protection against hepatic damage, and ascites developed due to portal obstruction.

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New England Journal of Medicine, Boston

237:719-754 (Nov. 13) 1947

Medical Group Practice in United States: II. Survey of Five Groups in New England and Middle Atlantic States. G. H. Hunt and M. Goldstein.—p. 719.
Splenic Cyst: Report of Case. H. Duby.—p. 731.
*Failure of Peritoneal Button Operation for Ascites: Report of 2 Cases. K. J. Welch.—p. 735.
Diagnostic Roentgenology: Congenital Lesions of Heart and Great Vessels: Nephrography. R. Schatzki.—p. 738.
Bronchiogenic Cyst.—p. 743.
Post-Radiation Cicatrix of Cervix, with Stenosis of Cervical Canal. —p. 746.

237:755-794 (Nov. 20) 1947

Occupational Dermatoses (Ergodermatoses): Diagnosis, Disability and Treatment. J. G. Downing.—p. 755.
Hepatitis of Hyperthermia: Report of Fatal Case. J. H. Bragdon. —p. 765.
Syphilitic Primary Optic Atrophy: Review of 54 Cases. S. Levin, L. D. Trevett and M. Greenblatt.—p. 769.
Inhibition of Cutaneous Pain Responses by Local Application of Cold: Simple Method of Reducing Pain of Hypodermic Injections. F. D. Ingraham, D. D. Matson and R. P. Woods.—p. 773.
Practical Considerations of Venous Pressure. H. H. Hussey and H. Jeghers.—p. 776.
Squamous-cell Carcinoma of Left Renal Pelvis.—p. 782.
Adenocarcinoma of Body of Pancreas, with Extension into and Ulceration of Stomach.—p. 786.

Failure of Peritoneal Button Operation for Ascites.—Welch points out that some of the surgical procedures employed for the treatment of recurrent massive ascites are designed merely to rid the patient of an oppressive volume of fluid; others attempt to eliminate factors in the production of ascitic fluid, and still others attempt to improve the body economy by returning water, electrolytes and protein to the general circulation. To this last group belongs the peritoneal button operation, in which a flanged glass tube is inserted between the peritoneal cavity and a pocket made in the subcutaneous tissues of the anterior abdominal wall. This has the theoretic advantage of providing a constant slow clysis of the patient's own blood transudate and the practical advantage of being a relatively simple operation that can be performed under local anesthesia. The authors describe the histories of 2 patients who were treated with the peritoneal button and in whom the defects were negligible after two to four weeks. Postmortem examination revealed a subcutaneous cystic space having a dense fibrous wall and communicating with the peritoneal cavity in each case. It is suggested that because of the small area of surface exposed and the fibrous character of the wall, little absorption can take place from such a cavity. The peritoneal button operation did not provide an effective, sustained, slow clysis of ascitic fluid in these cases.

New York State Journal of Medicine, New York

47:2367-2494 (Nov. 15) 1947

Problems Encountered in Treatment of Cutaneous Cancer. H. L. Traenkle.—p. 2414.
Fifteen Years of Electrocardiographic Exercise Test in Coronary Stenosis. D. Scherf.—p. 2420.
Cutaneous Ulceration in Organic Central Nervous Disease: Report of Trophic Ulcers in Case of Postmeningitic Myelitis and in Case of Dermoid Cyst of Spinal Cord. D. Bloom.—p. 2425.
Preparation of Elderly Patients for Large-Scale Operations. A. O. Wilensky.—p. 2432.
Some Observations on Tumor of Acoustic Nerve. B. C. Meyer.—p. 2436.
Treatment of Early Syphilis with Penicillin at Bellevue Hospital. E. W. Thomas.—p. 2439.
Treatment of Late Acquired Syphilis Other Than Neurosyphilis. J. W. Jordon and F. A. Dolce.—p. 2443.
*Serologic Tests in Penicillin-Treated Syphilis. C. R. Rein.—p. 2450.
Value of Symptoms and Physical Signs in Differential Diagnosis of Jaundice. W. F. Lipp, A. R. Lenzner and A. H. Aaron.—p. 2453.
Report of an Itching Dermatitis Apparently Due to Schistosoma Cercariae. W. A. Holla and E. A. Lane.—p. 2458.

Serologic Tests in Syphilis Treated with Penicillin.—Rein discusses the factors which influence the length of time required to attain seronegativity in syphilitic patients treated with penicillin. Generally, patients with secondary syphilis require more time to acquire seronegativity than patients with seropositive primary lesions. In some patients with syphilis there develop more antibodies or reagin than in others after the same type of stimulus. The former patients usually require more time to attain seronegativity. Patients with high serologic titers at the onset of therapy may require more time to attain seronegativity than those with relatively low titers. Certain types of tests may remain positive long after other tests have become negative. The amount of penicillin, the type of penicillin and the length of time required to administer that amount of treatment may also affect the length of time to attain seronegativity. As a rule, the higher the total dosage of penicillin and the longer the period of time during which the treatment is administered, the shorter the time required to attain seronegativity. There are many exceptions to the aforementioned factors. It is of utmost importance to educate patients in the great need of reporting to physicians for serologic and clinical examinations at regularly monthly intervals for at least one year following the completion of penicillin therapy. These examinations are important as a guide to response to treatment, as a means to differentiate between serologic relapse and reinfection, as a means to predict an impending clinical relapse and as a means to detect masked syphilis following a concomitantly treated gonorrheal infection.

Northwest Medicine, Seattle

46:833-915 (Nov.) 1947

Medical Investigation of Obscure and Suspicious Deaths in Interest of Public Safety. A. R. Moritz.—p. 851.
Nephrolithiasis. J. H. Harrison.—p. 858.
Management of Ureteral Calculi. R. T. Scott.—p. 862.
Carcinoma of Ampulla of Vater. A. R. MacKay.—p. 865.
Surgical Kidney in Hypertension with Case Report. F. L. Meeske. —p. 868.

Pennsylvania Medical Journal, Harrisburg

51:115-240 (Nov.) 1947

Can We Retrieve Breast-Feeding? N. M. MacNeill.—p. 137.
The 1946 Erie County Chest X-Ray Survey. R. D. Bacon.—p. 141.
Reoperation for Glaucoma. P. C. Kronfeld.—p. 148.
*Roentgen and Vitamin A Therapy for Treatment of Warts: Comparison of Two Methods and Report of 315 Treated Cases. S. H. Fisher and W. E. Chamberlain.—p. 151.
Management of Feeding Problems. J. B. Bartram.—p. 156.
Toxicologist as Crime Detector. A. O. Gettler.—p. 159.
*Carcinoma of Prostate Gland: Analysis of 135 Consecutive Cases. W. I. Buchert, D. A. Culp and G. H. Jones.—p. 165.
The Psychotic Child. H. M. Little.—p. 174.
Cancer of Skin. A. C. Cipollaro.—p. 180.

Treatment of Warts.—This analysis by Fisher and Chamberlain includes all patients who were admitted to the Radiation Therapy Department of Temple University Hospital from 1931 to June 1945 for treatment of warts. The authors compare roentgen therapy with that of vitamin A, on the basis of 315 cases. Because chronic ulcers have sometimes developed after roentgen therapy for warts, physicians should be interested in methods that are free from danger of such sequelae. Oral administration of vitamin A, 100,000 units per day, is followed by disappearance of the wart in an encouraging percentage of cases. When the wart is situated on the plantar surface of the foot, the likelihood of cure and the patient's comfort are both enhanced by generous use of a callus file (a wooden stick covered with emery particles). When vitamin A therapy fails and roentgen therapy is resorted to, treatment should be limited to an extremely small area by using a shield of metallic lead in which a small hole has been cut, of the order of 2 to 4 mm. in diameter. Repeated applications of roentgen rays are particularly to be avoided. Sequelae such as chronic ulcers do not follow single applications, even with large doses. Furthermore, results with single applications of 1,500 to 3,000 r are at least as good as those obtained with multiple applications.

Carcinoma of Prostate Gland.—The 135 cases of prostatic carcinoma reviewed by Buchert and his associates represent 13 per cent of the total number of patients with prostatism treated during an eight year period. Carcinoma of the prostate is an insidious disease which usually does not cause symptoms until it is far advanced. Thirty per cent of the patients had demonstrable metastatic lesions when first examined. In 81 per cent of the patients the diagnosis was made or suspected following digital examination. Cystourethroscopic examination, roentgenologic studies for metastasis and serum acid and alkaline phosphatase studies are useful adjuncts. Radical perineal prostatectomy is the treatment of choice in selected cases. According to the best authorities, it is justified in 5 per

cent or less of the patients. Obstructive symptoms can be satisfactorily relieved by transurethral resection of the obstructing tissue with minimal risk to life. Carcinoma of the prostate carries with it a poor prognosis. Fifty per cent of the patients who died did so during the first twelve months after seeking treatment. Bilateral orchiectomy and the administration of estrogens or both seem to be the treatment of choice for the relief of pain secondary to osseous metastasis. In patients with retention of urine transurethral resection followed by bilateral orchiectomy or estrogens or both seems to constitute the best treatment now available regardless of the presence or absence of demonstrable metastatic lesions. In patients without urinary obstruction orchiectomy and estrogenic therapy seem to be adequate.

Radiology, Syracuse, N. Y.

49:529-658 (Nov.) 1947

Role of Radiologist in Management of Patients with Intestinal Obstruction, with Special Reference to Use of Miller-Abbott Tube. E. C. Osgood.—p. 529.
*Bagasse Disease of Lungs. D. V. LeMone, W. G. Scott, S. Moore and A. L. Koven.—p. 556.
*Symmetric Calcification of Cerebral Basal Ganglia: Its Roentgenologic Significance in Diagnosis of Parathyroid Insufficiency. J. D. Camp.—p. 568.
*Emphysema: An Early Roentgen Sign of Bronchogenic Carcinoma. L. G. Rigler and G. M. Kelby.—p. 578.
Roentgenologic Study of Small Intestine: I. Neoplastic and Inflammatory Diseases. F. J. Hodges, R. W. Rundles and J. Hanelin.—p. 587.
X-Ray Signs of Altered Alimentary Function Following Autonomic Blockade with Tetraethylammonium. J. F. Holt, R. H. Lyons, Rosalie B. Neligh and others.—p. 603.
Acute Obstruction of Small Bowel: Value of Roentgen Examination in Early Diagnosis. J. Spencer and L. T. Thaxter.—p. 611.
Treatment of Epitheliomas of Skin. T. P. Eberhard.—p. 620.

Bagasse Disease of the Lungs.—According to LeMone and his associates inhalation of bagasse dust, derived from sugar cane after it has been crushed and the juice extracted, incites a pathologic process which has been termed "bagasse disease of the lungs" or "bagassosis." Bagasse is being used extensively in the manufacture of insulating building materials and refractory brick. It constitutes a serious industrial hazard unless properly handled. About two months of exposure to the dust are required before symptoms appear. The disease manifests itself as an acute febrile illness with extreme shortness of breath, a persistent cough with scanty mucoid sputum and profound weakness. The onset is insidious and gradual. Pulmonary changes incited by the inhalation of bagasse dust consist in a diffuse infiltration and consolidation, an acute bronchiolitis or pneumonia that is similar to that seen in pneumoconiosis but in one respect is greatly different. It is a reversible reaction, with the process undergoing resolution and the lung regaining its normal appearance on the roentgenogram. The etiologic basis is still obscure. Whether or not the pathologic reaction is due to fungi, bacteria or a virus associated with the dust, to an allergic response to the bagasse or its possible infectious agents or their products, to some chemical or physical property of the dust or to any combination of the foregoing factors has not been determined and is still under investigation.

Calcification of Cerebral Ganglions.—Camp says that, to date, at the Mayo Clinic, 12 cases of symmetric calcification of the cerebral ganglions have been observed in which there was definite clinical evidence of parathyroid insufficiency and tetany. In 1 case the calcification followed a thyroidectomy at the age of 19 years; in the other 11, the disease was of the spontaneous type. The pathologic basis for the roentgenologic changes is a colloid deposition in and around the finer cerebral blood vessels with subsequent calcification of the deposits, which coalesce and form vascular sheaths and concretions. Because of the rarity of spontaneous parathyroid insufficiency and the observance of 11 such cases in which symmetric calcification of the cerebral basal ganglions was observed, the author believes that the association of the two conditions should be emphasized. It is possible that some cases of cerebral calcification associated with mental deterioration and convulsive seizures reported in the literature may have included a parathyroid insufficiency. All patients with chronic parathyroid insufficiency should have a roentgen examination of the skull. In addition, a determination of the concentration of serum calcium should be made to establish or exclude parathyroid insufficiency in all cases in which roentgenograms show symmetric calcification of the cerebral basal ganglions. Treatment of the parathyroid insufficiency effects improvement in the mental condition and stops the convulsions without producing changes in the cerebral calcification; this suggests that the latter condition is not responsible for the mental deterioration.

Emphysema as Sign of Bronchogenic Carcinoma.—Rigler and Kelby think that obstructive emphysema has been insufficiently stressed as an early roentgenologic sign of bronchogenic carcinoma. This obstructive emphysema, which results from partial obstruction of the bronchus by the tumor, is best demonstrated by roentgenograms or fluoroscopic examination made during expiration. The transition from emphysema to atelectasis as the tumor grows and completely obstructs the bronchus may be readily determined by repeated roentgen examination. Five cases are reported in detail and 2 partially to illustrate the importance of these observations. Patients suspected of bronchogenic carcinoma but without frank roentgen evidence should always be examined in expiration as well as inspiration. Careful attention should be given to minor differences in radiability of the two lungs to determine whether obstructive emphysema is present. Such a determination should lead to further investigation by bronchography, planigraphy and bronchoscopy.

Surgery, Gynecology and Obstetrics, Chicago

85:675-808 (Dec.) 1947

Role of Vascular Spasm in Recovery of Strangulated Intestine: Experimental Study. H. Laufman and H. Method.—p. 675.
*Surgical Treatment for Symptoms Produced by Cervical Ribs and Scalenus Anticus Muscle. A. W. Adson.—p. 687.
Resection of Knee Joint for Suppurative Arthritis. J. E. Thompson, C. F. Stewart and W. H. Cassebaum.—p. 701.
Breast Cancer. H. C. Chase.—p. 712.
Laboratory and Clinical Experiences with Streptomycin Therapy in Management of Infections of Intestinal Origin. H. L. Silvani, S. Rothenberg, Helen Warmer and others.—p. 721.
*Microscopic Criteria for Diagnosis of Early Carcinoma of Cervix Uteri. E. E. Gurskis, D. C. Beaver and H. M. Nelson.—p. 727.
Acute Injuries to Neck Involving Food and Air Passages. M. E. Lichtenstein.—p. 734.
Treatment of Pancreatic Pain by Splanchnic Nerve Section. G. deTakats and L. E. Walter.—p. 742.
Surgical Treatment of Irreducible Intussusception in Infants. J. P. Barnes.—p. 747.
Relation of Protein Deficiency to Experimental Wound Healing. M. W. Kobak, E. P. Benditt, R. W. Wissler and C. H. Steffee.—p. 751.
*Papillary Carcinoma of Thyroid and Lateral Cervical Region: So Called "Lateral Aberrant Thyroid." G. Crile Jr.—p. 757.
Common and Uncommon Pathways in Spread of Tumors and Infections. E. Lachman.—p. 767.
Cholecystitis and Cholelithiasis: Analytical Report of 1,104 Operative Cases. R. Adams and A. Stranahan.—p. 776.
Standardized Method for Assessing Strength of Hand and Foot Muscles. F. H. Lewey, W. G. Kuhn Jr. and J. T. Juditski.—p. 785.
Acute Pancreatitis: II. An Experimental Study with Special Reference to X-Ray Therapy. T. C. Chisholm and R. E. Seibel.—p. 794.

Cervical Ribs and the Scalenus Anticus Muscle.—Reviewing his twenty-two years of experience in the treatment of symptoms produced by cervical ribs and the scalenus anticus muscle, Adson emphasizes the importance of the vascular test which indicates whether the volume of the pulse has been altered. It has been his experience that little is accomplished by scalenotomy unless the result of the vascular test is positive. He discusses the embryologic formation of supernumerary ribs, their incidence, etiologic factors and the symptomatology. His review of scalenotomy includes the 142 patients for whom scalenotomy was performed at the Mayo Clinic during the twenty-two years from 1925 to 1946 inclusive. He differentiates three groups. The first includes patients for whom scalenotomy was performed without resection of cervical ribs (63 patients). Group 2 includes patients for whom combined operations were performed, that is, scalenotomy and resection of cervical ribs by the anterior approach (26 patients). Group 3 includes patients for whom scalenotomy was performed in the absence of cervical ribs (53 patients). The results obtained in the latter group were not as favorable as those obtained in the first two groups. The author concludes that the treatment which he described in 1927, that is, scalenotomy and sectioning of the insertion of the scalenus anticus muscle, occasionally with resection of the distal portion of the muscle when the muscle is decidedly hypertrophied, constitutes the operation of choice. A combined operation, scalenotomy

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and resection of cervical ribs, is indicated when the cervical rib is completely formed and is situated high in the neck so that the brachial plexus must ride over the rib in its course into the axilla. Subtotal resection of the cervical rib can be accomplished with the use of a rongeur, through the same wound, by separation of the middle and lower trunks of the brachial plexus.

Early Carcinoma of Cervix Uteri.—Gurskis, Beaver and Nelson obtained slide files of the laboratory of Woman's Hospital and of the department of pathology of Wayne University College of Medicine in Detroit. A total of 15 were selected from several thousand cases. Nine of these did not disclose invasive carcinoma elsewhere in the cervix, and 6 revealed early invasive carcinoma in the same cervix. The criteria of early noninvasive carcinoma were interpreted as possessing the following characteristics: 1. The squamous epithelial cells had a decreased amount of cytoplasm with deeply stained oval nuclei. These changes were found in all 15 cases. 2. All cells of the epithelium resembled each other closely from the basal to the uppermost layer so that the basal layer was not distinguishable. This change was observed in 12 cases. 3. In all cases there was an increase in the number of cells of the stratum germinativum. 4. In 14 cases mitotic figures were present. 5. The basement membrane was not penetrated in any of the noninvasive cases. 6. The subepithelial tissue in all cases was infiltrated with lymphocytes. 7. Seven of the cases disclosed a line of demarcation between normal and carcinomatous epithelium. In 3 of these the transition was gradual, and in the others the demarcation was abrupt and distinct. 8. All 15 cases showed a loss of polarity of the cells. 9. The changes of early carcinoma were also found in areas of coexistent metaplasia in 8 cases. Usually the epithelium overlying these areas was involved in the same process. 10. In 2 cases leukoplakia existed in conjunction with the changes of early carcinoma in the surface epithelium. In 1 of these 2 cases invasive carcinoma was disclosed in some areas. The authors conclude that the results of their studies corroborate the earlier work of Rubin, Meyer, Schiller, Broder and others to the effect that cellular changes, which are regarded as the early manifestations of malignant transformation, develop in the surface stratified squamous epithelium of the portio vaginalis of the cervix. These changes occur before there is invasion and before there is clinical evidence of carcinoma.

Papillary Carcinoma of Thyroid.—Crile reviews observations on 21 patients with papillary carcinoma of the thyroid and lateral cervical region. All patients have been followed from five to twenty-one years, or until their death, and only 3 have died from cancer after they had lived for nine, fifteen and nineteen years, respectively, after the original thyroidectomy. One patient who has refused all treatment is well twenty-seven years after the appearance of the lateral cervical nodules and twenty-one years after these nodules were proved to be papillary tumors of the thyroid. In judging the results of treatment of papillary carcinoma of the thyroid the usual five year period is meaningless. In 16 consecutive patients with papillary tumors of the lateral cervical region, when the thyroid was carefully examined a primary tumor in the thyroid was found. The lateral cervical nodules are probably metastases from a tumor of the thyroid rather than, as was previously believed, primary tumors of congenital origin. Lateral cervical tumors may continue to form until the primary tumor in the thyroid is removed. After this no more lateral cervical nodules appear. In the few cases in which roentgen therapy has been given the results have been disappointing. Results of excision of the primary tumor and the lateral cervical and mediastinal metastases have been excellent. The lateral cervical nodules seldom invade muscles or blood vessels, and block dissection of the neck is therefore not necessary. Since most of the patients are young women, it is an advantage to perform the operation through a thyroidectomy incision or, in the more extensive cases, through an incision parallel to the sternomastoid. The tumor in the thyroid may be small and often is not palpable preoperatively. It usually is scarred or calcified and may not enlarge appreciably over many years in spite of the fact that it continues to give rise to lateral cervical metastases. The primary tumor in the thyroid and the lateral cervical and mediastinal metastases should be excised.

United States Naval Med. Bulletin, Washington, D. C.

47:937-1144 (Nov.-Dec.) 1947. Partial Index

Dual Perforated Peptic Ulcer and Duodenal Fistula. L. G. Bell, J. C. Owens and W. J. MacMurtrie Jr.—p. 937.
*Bladder Management Following Spinal Injury. L. L. Veseen, W. W. Miller Jr. and G. C. Paynter.—p. 945.
Removal of Ureteral Calculi by Catheter Traction with Report of 3 Cases. J. J. Robbins.—p. 954.
*Renal Decapsulation in Treatment of Oliguria and Anuria. E. S. Lowe.—p. 959.
Yaws Treated with Single Massive Doses of Penicillin. S. L. Arje. —p. 965.
Extragenital Primary Syphilis. L. K. MacClatchie.—p. 970.
Arachnidism with Report of Case. D. E. Billman.—p. 975.
Review of Neurosyphilis. R. E. Rock and E. F. Mee.—p. 983.
Management of Wounds and Wound Healing. T. C. Ryan.—p. 991.
Experiences of Medical Officer in Air Transport of Patients by Naval Air Transport Service. J. P. Pollard.—p. 1000.
Sarcoma of Soft Tissues: Discussion and Report of 8 Cases. A. I. Holleb.—p. 1005.
Mucous Membrane Grafts from Inferior Turbinate in Reconstruction of Orbit. H. P. Schenck.—p. 1014.
Instrument Sterilization in Desert Country. C. E. Dawson.—p. 1019.
Recurrent Inguinal Hernia: Report of 2 Unusual Cases. R. B. Brown and L. L. Haynes.—p. 1053.
Eosinophilic Granuloma of Bone, with Report of 2 Cases. W. M. Silliphant and D. B. Hull.—p. 1058.
Extragenital Choriocarcinoma of Male with Bilateral Gynecomastia: Report of Case. H. J. Caes and R. W. Cragg.—p. 1072.
*Methyl Salicylate Poisoning: Report of 2 Cases and Review of Literature. J. J. Cancelmo Jr.—p. 1077.

Bladder Management Following Spinal Injury.—Veseen and his associates assert that genitourinary complications are the chief causes of the high morbidity that follows injury to the spinal cord. They discuss the neural anatomy of the bladder and stress that the ultimate aim of the urologist is to assist nature in producing the return of normal bladder function or the closest alternative, the automatic bladder. The authors outline a program for management which has been successful in their experience.

Renal Decapsulation.—Lowe says that renal decapsulation has been almost completely discredited in recent years, undoubtedly because this procedure was employed in conditions which did not and could not respond to it; however, decapsulation appears to be gaining a little of its previous acceptable standing as surgeons obtain favorable results with it in treatment of cases of anuria and oliguria. The author reports the case of a man who had ingested a "can" of oxalic acid two hours previously in a suicidal attempt. This case of chemical nephrosis caused by ingestion of oxalic acid did not respond favorably to medical treatment, but developed into anuria, alarming edema and nitrogen retention despite the administration of large amounts of fluids intravenously. Immediately after bilateral decapsulation, the kidneys began to function, secreting 1,240 cc. of urine in the first twenty-four hours postoperatively and 2,000 cc. in the second twenty-four hours. Urinary output was normal thereafter. Blood urea nitrogen began to fall immediately after the operation, and returned to normal. The urine cleared after the operation. It is concluded that the anuria was relieved by decapsulation of the kidneys, indicating that the operation has merit in selected cases.

Methyl Salicylate Poisoning.—Cancelmo presents 2 cases of acute methyl salicylate poisoning with a brief review of the literature. The 2 seamen whose cases are reported had drunk the contents of a bottle containing 120 cc. of oil of wintergreen because it tasted good and they thought that there was alcohol in it. One of the men had ingested about 90 cc. and the other one about 30 cc. The latter survived, but the former died in spite of the fact that some of the fluid had been aspirated. The author says that convulsions, fever and pneumonia present therapeutic problems. Until the conflicting views regarding the physiochemical changes are settled, one should treat these patients symptomatically, following the chemical changes in the blood and urine as well as possible and treating accordingly. There is clinical evidence to warrant and experimental evidence to substantiate the use of sodium bicarbonate, intravenous fluids (dextrose, saline and lactate solutions), vitamin K, calcium gluconate and sedatives in the treatment of salicylate intoxication. Methyl salicylate is a potent and fairly rapidly acting poison. Bottles containing this drug should be clearly labeled "poison."

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

Brain, London

70:225-360 (Sept.) 1947

Anatomy of Traumatic Epilepsy. W. R. Russell.—p. 225.
Diffuse Progressive Metachromatic Leukoencephalopathy: Form of Schilder's Disease Related to Lipoidoses. R. M. Norman.—p. 234.
*Penicillin in Suppurative Lesions of Brain and Meninges. H. Cairns. —p. 251.
Muscle Tone and Organization of Motor Cortex. J. F. Bosma and E. Gellhorn.—p. 262.
Atypical Intracerebral Hemorrhage with Special Reference to Cerebral Hematoma. E. C. O. Jewesbury.—p. 274.
Terminal Connexions of Olfactory Tract in Rabbit. W. E. Le Gros Clark and M. Meyer.—p. 304.
Role of Pyramidal System in Willed Movements. F. M. R. Walshe. —p. 329.

Penicillin in Suppurative Lesions of Brain.—Cairns shows that the access of penicillin to contaminating or infecting bacteria is important particularly in the central nervous system, not only in brain wounds and abscesses but also in pyogenic meningitis, in which blockage of the cerebrospinal pathways may interfere with the spread of penicillin injected intrathecally. In the first 16 cases of pneumococcic meningitis treated with intrathecal penicillin, sulfonamide compounds were withheld, and there were 12 recoveries. Thereafter sulfonamide drugs by mouth were always combined with penicillin, since the two drugs are not antagonistic and the preadmission history in the majority of cases has clearly shown the beneficial effect of sulfonamide compounds. In adequate oral or systemic dosage these drugs, in particular sulfadiazine, usually control the symptoms of pneumococcic meningitis, at least for a time. The author reviews the results of treatment in pneumococcic and meningococcic meningitis, purulent pachymeningitis and brain abscess. He concludes that penicillin is not miraculous in its effects. Given access to sensitive organisms it will assist in their destruction only so long as its concentration remains adequate; but when it has disappeared from the infected area, organisms multiply once more and attack the tissues with their original virulence. The use of penicillin therefore demands a greater degree of precision and planning than has been accorded to less powerful remedies.

British Medical Journal, London

2:855-896 (Nov. 29) 1947

*Value of B.C.G. Vaccination in Control of Tuberculosis. G. S. Wilson. —p. 855.
Sympathectomy and Intraspinal Alcohol Injections for Relief of Pelvic Pain. J. P. Greenhill.—p. 859.
Relief of Pain in Intractable Cancer of Pelvis. M. Kenny.—p. 862.
*Staphylococcal Infection Due to Penicillin-Resistant Strains. Mary Barber.—p. 863.
Allergy to Penicillin with Symptoms of Serum Sickness. A. G. Wilkinson and K. Zinnemann.—p. 865.
Chronic Battle Neurosis Treated with Leukotomy. W. Sargant and C. M. Stewart.—p. 866.

BCG in Control of Tuberculosis.—Wilson reports investigations in which a control group of persons was studied along with a group that was vaccinated with BCG (Bacillus of Calmette and Guerin). He concludes that the documentary evidence so far available is insufficient to allow an estimate of the degree of protection it affords or even to prove conclusively that, in a civilized population, it has any protective effect at all. Some of the disadvantages of BCG vaccination are enumerated, and it is argued that, unless the gains from its use are likely to be substantial, BCG vaccination may not be worth while. Since the risk of dying from tuberculosis in the first year of life is so small, universal vaccination of infants is out of the question, and vaccination, if it is used, should be restricted to specially exposed groups like nurses, medical students and children in tuberculous families. It is doubted whether the relative degree of immunity that might be conferred by BCG vaccination would have any greater effect in lowering the mortality than measures designed to shield nurses against undue risk of exposure to tuberculous infection. Since the normal antibody-producing mechanism does not seem to reach maturity till toward the end of the first year of life it might be advisable, if BCG is to be used, to remove the infant from its tuberculous home at birth and delay vaccination with BCG till it is at least 6 months of age.

Staphylococci Resistant to Penicillin.—Barber shows that the incidence of strains of Staphylococcus pyogenes that are grossly resistant to penicillin is increasing rapidly. In a previous study out of a series of 200 patients yielding cultures of Staph. pyogenes penicillin-resistant strains were isolated from 25 (12.5 per cent). In analyzing a series of 100 patients with staphylococcic infection between February and June, 1947, it was found that as many as 38 yielded penicillin-resistant strains. In some cases the penicillin-resistant organisms are present in the original lesion but overgrown by sensitive strains until penicillin treatment leaves them a clear field by getting rid of the latter. Hospital infection with Staph. pyogenes is, however, fairly common, and, penicillin-resistant staphylococci occur far more often in patients who have been in hospital some time than in new admissions. In any hospital using large quantities of penicillin bacteria resistant to its action are probably increasing at the expense of those that are sensitive, and it seems not impossible that in time the resistant organisms will be the sole survivors. That a penicillin-resistant strain of Staph. pyogenes once it has got a footing in the hospital may spread from patient to patient is well illustrated by a series of cases occurring in a unit of the author's hospital. The best method for the detection of penicillin-resistant bacteria in specimens sent to the laboratory is to plate out the infected material direct onto a penicillin ditch plate, using a concentration of about 10 units of penicillin per cubic centimeter of agar in the ditch.

Edinburgh Medical Journal

54:465-528 (Sept.) 1947

Production of Streptomycin. S. W. Challinor and H. K. King.—p. 465.
Physical and Chemical Factors Concerned in Hemolysis. E. B. Hendry.—p. 476.
Mass Radiography in Glasgow: Report on First 50,000 Examinations. A. Maclean.—p. 488.
Treatment of Placenta Previa. J. Sturrock.—p. 496.

Indian Medical Gazette, Calcutta

82:379-442 (July) 1947. **Partial Index**

Treatment of Amebic Liver Abscess with Secondary Infection. R. N. Chaudhuri and H. Chakravarti.—p. 379.
New Treatment of Scabies. D. N. Roy and S. M. Ghosh.—p. 380.
Early Diagnosis of Tsutsugamushi. N. Khan.—p. 381.
Rheumatic Diseases and Mouth Infection. A. Ganguli.—p. 389.
An Unusual Phenomenon in Strychnine Convulsions. A. M. J. Shirazi. —p. 394.
*Evaluation of Prothrombin Response to Vitamin K as Liver Function Test. P. N. Wahi.—p. 396.
Prognostic Significance of Leukocytic Count in Bubonic Plague. P. M. Wagle and R. B. M. Colah.—p. 399.
Tropical Eosinophilia with Melaena as Complication During Arsenical Therapy: Case Report. A. Chand and D. C. Gupta.—p. 402.
Heterozygous Rh Transmission in Large Family with Case of Erythroblastosis Fetalis. K. S. Ranganathan.—p. 404.

Prothrombin Response to Vitamin K as Liver Function Test.—The observations presented by Wahi are the result of his efforts to correlate the hepatic function tests with observations in biopsy of the liver. During these studies, which included all types of disorders of the liver, it became obvious that all such patients had hypoprothrombinemia, which showed a varying response to parenteral administration of vitamin K. In cases with intense jaundice there is a low level of plasma prothrombin. If after administration of vitamin K there is a rapid return of the prothrombin level to normal, the jaundice is likely to be obstructive, while if the response is poor, a parenchymatous lesion is present.

Journal of Royal Army Medical Corps, London

89:91-142 (Sept.) 1947

Acrylic Ocular Prosthesis. F. J. Sellers.—p. 91.
Chemoprophylaxis of Malaria. R. W. Scott.—p. 101.
Suppression of Malaria by Mepacrine. G. Wynne-Griffith.—p. 112.
Psychiatric and Allied Aspects of Problem of Venereal Disease in Army. T. A. Ratcliffe.—p. 122.
*Pitressin Hydration Test in Diagnosis of Epilepsy. D. Cappon.—p. 132.
Sulfonamide Anuria. J. A. V. Nicoll.—p. 135.
Note on Sickling and Flying. G. M. Findlay, E. A. Boulter and C. B. MacGibbon.—p. 138.

"Pitressin" Hydration Test in Diagnosis of Epilepsy.—According to Cappon the differentiation between epilepsy and hysteria is often difficult. He cites the case of a young soldier who presented most of the clinical criteria of hysterical fits:

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a poor psychiatric background, a psychopathic personality, witnessing fits before, fits occurring always in the presence of other persons without severe injury, no incontinence, atypical convulsions, the fits starting fairly late in adolescence. The "pitressin" hydration test was employed by giving an initial dose of 0.5 cc. of a "pitressin" preparation intramuscularly, with 300 cc. of water orally and subsequently at two hour intervals injections of 0.25 cc. of the drug followed by 300 cc. of water. A total of ten injections was given. An intake and output chart showed the antidiuretic effect with retention of water. The body weight was increased by 2 per cent. After the fifth injection the patient had an epileptiform convulsion. Thus the "pitressin" test proved the existence of epilepsy, and effective treatment was instituted. The author stresses that in the absence of facilities for electroencephalography the "pitressin" hydration test may be found useful in the diagnosis of epilepsy.

Lancet, London

2:781-816 (Nov. 29) 1947

Hepatic Syndrome of Wide Distribution Illustrated by Lesions in Malaria and Blackwater Fever. B. Maegraith, W. H. H. Andrews and D. Gail.—p. 781.
Epidemic Myalgia or Bornholm Disease in South India: Review of 19 Cases. H. J. Hamburger and C. McNeil.—p. 784.
Symptoms Due to Meckel's Diverticulum. S. Taylor.—p. 786.
Determination of Hemoglobin: II. Haldane Hemoglobin Standard Compared with Iron and Gasometric Estimations. E. J. King, M. Gilchrist, I. D. P. Wootton and others.—p. 789.
Dissemination of Hemolytic Streptococci in Air. L. Colebrook and W. P. D. Ross.—p. 792.
*Calciferol in Treatment of Chilblains. S. T. Anning.—p. 794.

Calciferol in Chilblains.—Anning points out that calciferol has been widely advertised as effective in the treatment of chilblains. The author compared the incidence of chilblains during last winter in 103 patients who received calciferol in large doses for lupus vulgaris, sarcoidosis and the like with the incidence in 159 patients not given calciferol. There was no statistically significant difference between the test and control groups as regards the incidence of chilblains. These results suggest that calciferol is ineffective in preventing chilblains. Calciferol appears to have no effect in the treatment of chilblains, since chilblains developed and persisted about the same length of time in all the groups. As treatment with calciferol in high dosage is not without danger, it would be as well if its use for chilblains were discontinued.

Tubercle, London

28:223-245 (Nov.) 1947

*Endocavitary Aspiration: Its Practical Applications. V. Monaldi.—p. 223.
Secondary Pleurisy with Effusion in Pulmonary Tuberculosis. B. C. Thompson.—p. 229.
Tuberculosis in Post-War Europe An International Problem. M. Daniels.—p. 233.

28:247-268 (Dec.) 1947

Further Investigations Concerning Relation Between Erythema Nodosum and Tuberculosis. H. J. Ustvedt.—p. 247.
Persistent Pulmonary Collapse After Artificial Pneumothorax Treatment. B. Couts.—p. 252.

Endocavitary Aspiration.—Monaldi cites physiopathologic and clinical aspects of cavity formation which led him to develop his method of endocavitary aspiration. He cites cases which illustrate the efficacy of the method when employed either alone or in conjunction with surgical collapse therapy. Statistics analyzing the good results and the failures are lacking, chiefly because records have been lost during the war. If the intracavitary suction method is applied with a rigorous and careful technic it entails no dangers. When it is accompanied by collapse treatment it widens the field of therapeutic possibilities, because many patients who could not be operated on without this method may now be treated. It simplifies the application of thoracoplasty by making it more limited, by improving the conditions under which it is performed and by considerably raising the percentage of successful operations. The autonomous endocavitary aspiration method has a wide application. It will be fully developed only when it is possible to solve the technical problem concerned with the closure of the draining bronchus. The documentary evidence to date concerning the therapeutic possibilities of this method used alone consists of approximately 100 patients who work, enjoy perfect health and display no symptoms of illness.

Acta Medica Orientalia, Jerusalem

6:277-306 (Sept.) 1947

Uterine Malformation in Pregnancy and Labor. A. Sadovsky and A. Brzezinsky.—p. 277.
*Undescended Scapula (Sprengel's Deformity): Report of 3 Cases and New Operative Technic of Fixation. E. Spira and A. Axer.—p. 282.
Medical Uses of Papain with Special Reference to Allergic Diseases. M. J. Gutmann.—p. 288.
Case of "Rattling Shoulder Blade." R. Leffmann.—p. 293.
Fructose, the Sugar Constituent of Human Seminal Plasma: Preliminary Report. J. Leibovitz and M. Michael.—p. 296.
Some Notes About Psychoanalysis, Its Development and Present Trends. E. Gumbel.—p. 298.

Sprengel's Deformity.—Spira and Axer describe Sprengel's congenital upward displacement of the scapula in 2 boys, aged 10 and 5 years, respectively, and in a girl aged 13. In 1 patient the condition was corrected by a new surgical technic. The plan of operation fell into three phases: (1) widening the shoulder girdle; (2) lowering the scapula and removing the omovertebral bone and (3) fixation of the lowered scapula. The functional result of this operation was excellent, but cosmetically it was only satisfactory. The authors suggest further technical improvements in the operation.

Acta Orthopaedica Scandinavica, Copenhagen

17:1-172 (No. 1-2) 1947. **Partial Index**

Contribution to Technic in Fusion Operations on Spine. A. Berg.—p. 1.
*Retroposition of Vertebrae as Early Sign of Tuberculous Spondylitis of Lumbar Spine. L. Hagelstam.—p. 31.
Some Cases of Paradiscal Defects in Anterior Portion of Vertebral Body, with Remarks on Pathogenesis of Lesions in Question. A. Hellstadius.—p. 50.
Bipartite Carpal Scaphoid Bone. T. Jerre.—p. 70.
Ollier's Disease and Its Relation to Other Forms of Chondrodysplasia. A. Langenskiöld.—p. 93.

Early Signs of Tuberculous Spondylitis.—Hagelstam says that tuberculous spondylitis does not always become evident in roentgenograms; large vertebral foci were found at necropsy when roentgenograms were negative. In the course of the methodical examination of roentgenograms of 59 patients with tuberculous spondylitis he observed in some a backward displacement of one or more vertebrae before the tuberculous vertebra had collapsed, the process having been localized to the lumbar spine. He reports histories of several of these patients and concludes that an instability between the vertebrae in the lumbar part of the spine arises early in the clinical course of tuberculous spondylitis as well as with degeneration of a disk. In the roentgenogram this instability might show itself as a retroposition and might occur before any tuberculous changes in the vertebra itself are visible. When tuberculous spondylitis in the lumbar part of the spine is suspected the retroposition of a vertebra favors the belief that the process is to be found in either vertebra adjacent to the injured disk.

Boletín de la Asociación Médica de Puerto Rico

39:391-428 (Nov.) 1947. **Partial Index**

*Surgical Treatment of Patent Ductus Arteriosus. D. Rodríguez Pérez.—p. 391.
Present Status of Thiouracil in Treatment and Presurgical Preparation of Patient with Basedow's Disease. C. B. Moore.—p. 415.

Surgical Treatment of Patent Ductus Arteriosus.—The subject of this report is an adolescent of 13 years who was normal up to the age of 12, when acute cardiac symptoms appeared. Roentgen examination of the chest and electrocardiograms showed abnormalities which disappeared after the operation, which consisted in ligation of the patent ductus arteriosus by Blalock's technic. The patient recovered and is normal one year after the operation.

Cervello, Naples

23:401-472 (Nov. 15) 1947. **Partial Index**

*Lumbopubic Electroshock in Therapy of Essential Enuresis. A. Pacifico.—p. 401.
*Penicillin in Therapy of Amentia. G. Zanetti.—p. 447.

Lumbopubic Electroshock in Essential Enuresis.—Lumbopubic electroshock consists of placing electrodes over the cutaneous segments corresponding to the second lumbar vertebra and pubic symphysis, and passing an electric current of 200 or

300 milliamperes (80 volts) for one tenth of a second. The treatment was administered to 11 children between the ages of 6 and 8 years and 1 youth of 16 years of age with nocturnal and diurnal enuresis. None of the patients had syphilis or spinal, urethral or vesical organic changes. Three patients in the group had epilepsy; treatment for enuresis failed in these cases. Shock therapy was given every other day up to a total of three or four. Enuresis was controlled from the first shock treatment in all cases, with the exception of the patients with epilepsy. The latter were given a daily additional shock treatment for six more days, without any effect. The treatment was well tolerated and presented no contraindications. The effect persisted for two months after discontinuation of treatment. This is a preliminary report.

Penicillin in Amentia.—The author resorted to penicillin therapy for five consecutive days in 5 cases of amentia of infectious origin. There was acute delirium with hallucinations or stupor, irregular fever, pronounced dehydration, anemia, gastrointestinal disorder, rapid loss of weight, dissociation between pulse and temperature, hypotension and oliguria. Complete recovery of the patients was obtained.

Klinische Wochenschrift, Heidelberg

24/25:257-288 (Feb. 1) 1947. **Partial Index**

*Factor in Serum, Increasing Erythrocyte Respiration. J. Pirwitz. —p. 263.
Effect of Insulin on Thyroid, Anterior Lobe of Pituitary Gland and Adrenal. E. Schulze.—p. 265.
*Range of Output of Heart Muscle with Pathologically Lowered Frequency: Conduction Disturbances of Various Degrees. H. Stollreiter.—p. 269.
Correlation Between Serum, Periston and Congo Red. R. Schubert and E. Wiegandt.—p. 273.

Increased Erythrocyte Respiration.—Pirwitz prepared a mixture in physiologic proportion of the serum of patients with anemia whose blood was strongly regenerating, and of erythrocytes of normal persons. The respiration volume of the mixed fluid was increased proportionally to the number of reticulocytes in the blood from which the serum was obtained. A powder was prepared from a dried mixture of equal parts of centrifuged erythrocytes of 10 normal persons. By adding this powder to the patient's serum definite conclusions could be drawn as to the intensity of the respiration-increasing factor in the serum of any patient. Additional experiments made it likely that the factor in the serum which increases the oxygen consumption of the erythrocytes may be identical with an erythropoietic factor in the serum which has previously been described by the author.

Heart Muscle and Pathologically Lowered Frequency.—Stollreiter studied the circulation of 7 patients between the ages of 40 and 70 years in whom disturbances of conduction of various degrees were demonstrated by the electrocardiogram. Three patients had a total heart block and 4 patients had a partial heart block. Central and peripheral slowing of frequency with 24 to 40 beats was predominant. In partial as well as in total heart block the heart muscle reacts to a lowered frequency which has continued for some time with dilatation and hypertrophy (increase in cardiac output and heart action, dilatation of the heart chambers due to enlargement of the heart to both sides). Decompensation of the heart with obstruction of the pulmonary circulation need not be present, although the myogenic reserves may be heavily taxed with it at rest. The minute volume at rest corresponded to the norm in 6 patients, and only in 1 patient was it reduced about 30 per cent. Increase in blood pressure was manifested frequently and corresponded to the large cardiac output. By placing an extra load on the heart the reduced output of the cardiac muscle could be demonstrated in those cases in which it was not yet evident at rest. Examination in standing position revealed reduction of cardiac output up to 68 per cent, which may be explained by the damage to the heart muscle in addition to the effect of the extracardiac regulation. This becomes even clearer with muscular work (turning work on the ergometer) when the highest increase in cardiac output may be only 37 per cent as compared to that of several hundred per cent in normal persons. Analysis of the circulation thus provides an explanation for the clinical picture associated with pathologically lowered frequency. Although the cardiac muscle of these patients at rest is taxed several times more heavily than that of the normal persons, decompensation by no means results at rest. It is obvious that with the changed mechanics of the heart and of the circulation treatment of decompensation of the cardiac muscle may be inadequate and only temporarily effective.

Prensa Médica Argentina, Buenos Aires

34:2035-2082 (Oct. 24) 1947. **Partial Index**

*Syndrome of Thrombosis of Posterior and Inferior Cerebellar Arteries. A. V. Di Ció, G. A. Lista and J. Remolar.—p. 2040.

Syndrome of Thrombosis of Posterior and Inferior Cerebellar Arteries.—The syndrome of thrombosis of the posterior and inferior cerebellar arteries is rare. It is more frequent in persons in the sixth decade of life. Thrombosis of cerebellar vessels, with either arteriosclerosis or atheromatous lesions, and syphilitic cerebellar arteritis are the most frequent causes. The symptoms are anesthesia and pain in the area of distribution of the trigeminal nerve, paralysis of the vocal cords, pharynx and velum palatinum, disorders of deep sensibility of the extremities and cerebellar symptoms. The contralateral symptoms are those of sensory disorders of the trunk and extremities, with dissociation of the syringomyelic type. The complete syndrome is definitely established several hours after sudden appearance of the first nervous symptoms (mainly trigeminal pain and trigeminal anesthesia to temperature). Decided spontaneous improvement occurs in the majority of cases. The treatment is symptomatic. Good results are obtained from antisyphilitic treatment when the syndrome is of cerebellovascular syphilitic origin. A certain degree of invalidism remains after disappearance of the syndrome. A final cerebral vascular accident always occurs within a period of time which varies between five and six years. The author reports a case in a syphilitic man aged 59 years. Spontaneous recovery occurred before administration of antisyphilitic treatment. Improvement became pronounced after antisyphilitic treatment.

Revista de la Asociación Méd. Argentina, Buenos Aires

61:713-766 (Oct. 15-30) 1947. **Partial Index**

*Streptomycin in Therapy of Bronchopleurocutaneous Fistulas of Tuberculous Origin. R. F. Vaccarezza and A. Raimondi Jr.—p. 713.

Streptomycin in Bronchopleurocutaneous Fistulas.—The subject of this report had two bronchopleurocutaneous fistulas as a result of peripleuritis complicating tuberculous pleural empyema. The fistulas lasted for eighteen and six months, respectively, without any tendency to close. Streptomycin in daily dose of 2 Gm. was given by the parenteral route for sixty days. The fistulas closed in fifteen and thirty days respectively.

Revista Médica de Rosario

37:733-822 (Sept.) 1947. **Partial Index**

*Agranulocytosis Provoked by Thiouracil. J. Solis and T. C. Minnhaar. —p. 733.

Thiouracil Agranulocytosis.—Hemograms were repeatedly made in the course of thiouracil treatment of 2 patients with hyperthyroidism. Both patients were women 53 years of age. In the first case the hemogram showed agranulocytosis on the twenty-second day of thiouracil treatment. The drug was discontinued although definite clinical symptoms of agranulocytosis did not appear. In the second case clinical symptoms of acute agranulocytosis appeared in the course of the third month of administration of the drug. The hemogram was normal the day before the appearance of agranulocytosis, although there was relative leukopenia. It was of the agranulocytic type two days later. Penicillin was successfully administered in both cases. Solis and Minnhaar emphasize: (1) the importance of repeated hemograms in the course of thiouracil treatment; (2) the unusual occurrence of a normal hemogram before appearance of agranulocytosis; (3) the significance of leukopenia (even under 4,000 leukocytes) as a warning of possible changes in the blood, and (5) the value of penicillin treatment and discontinuation of thiouracil.

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Book Notices

Hodgkin's Disease and Allied Disorders. By Henry Jackson, Jr., A.B., M.D., Assistant Professor of Medicine, Harvard Medical School, Boston, and Frederic Parker, Jr., A.B. M.D., Associate Professor of Pathology, Harvard Medical School. Oxford Medical Publications. Cloth. Price, $6.50. Pp. 177, with illustrations. Oxford University Press, 114 Fifth Ave., New York 11, 1947.

Professors Jackson and Parker of Harvard are admirably qualified for this pathologic and clinical study of Hodgkin's disease and of related primary neoplasms of lymph nodes. This book represents the fruits of long study of a wealth of material, and its compilation obviously has been a labor of love.

The diagnosis of Hodgkin's disease must rest on a properly executed biopsy where the essential feature is the presence of Reed-Sternberg cells. The authors believe that Hodgkin's disease should be divided into three types, paragranuloma, granuloma and sarcoma, because the pathologic picture, clinical aspects and prognosis differ in each type; however, transition forms of these types occur. Paragranuloma is confined to lymph nodes and has a complete lack of invasiveness, but Hodgkin's granuloma, a more virulent disease, may involve and infiltrate any organ. The authors are of the opinion that the evidence bespeaks an infectious or inflammatory process for the first two forms, whereas Hodgkin's sarcoma behaves as a true tumor. These opinions are not apt to be widely adopted *in toto*, since the three forms of Hodgkin's disease which the authors describe can be more simply conceived as the same disease developing at different rates from slow to fast, respectively.

The authors cultured a small gram-positive anaerobic gas-forming bacillus from the lymph nodes in a "considerable number" of cases of Hodgkin's disease. They wisely refrain from implicating this organism as the etiologic agent of the disease, which, as they state, has yet to be discovered. Their advocacy of the inflammatory nature of Hodgkin's disease, however, is not in accord with the opinion of most workers, who in increasing numbers regard the disease throughout as a neoplasm.

Two of the most interesting present developments in Hodgkin's disease have been the observations of Grand and other members of the Chambers' school who found that extracts of lymph nodes involved by this disease have a necrotizing effect on cells in tissue culture due to a filtrable agent; this work is not discussed. Also, the nitrogen mustards have been extensively investigated as therapeutic agents in Hodgkin's disease, and it is unfortunate that Jackson and Parker have had no personal experience with these materials.

In addition to Hodgkin's disease, which comprises about two thirds of the volume, there are chapters on reticulum cell sarcoma, lymphosarcoma, lymphocytoma, giant follicle lymphoma, plasmocytoma and endothelioma. At the end of each chapter there is a series of magnificent plates illustrating the microscopic anatomy and roentgenographic features of the diseases discussed.

The Problem of Fertility: Proceedings of the Conference on Fertility Held Under the Auspices of the National Committee on Maternal Health. Edited by Earl T. Engle. Cloth. Price, $3.75. Pp. 254, with illustrations. Princeton University Press, Princeton, New Jersey; Oxford University Press, Amen House, Warwick Sq., London, E. C. 4, 1946.

This book comprises sixteen papers read at the conference of the National Committee on Maternal Health, held in February 1946. Much valuable material is contained in them. Although some papers are mainly of practical importance for the veterinarian and animal breeder, they are of great interest to the progressive physician. For the gynecologist there is much of interest concerning the changes of the ovary at the time of ovulation, the biology of human and animal spermatozoa and their viability and behavior in the cervix and the other parts of the female genitalia. Artificial insemination and the changes in the cervical mucus during the menstrual cycle are admirably discussed by experts in this as in the other fields. The impression gained from reading this book is of the great progress achieved in the last few years in knowledge of the reproductive process. This small but comprehensive book deserves to be read carefully by every biologist, veterinarian, gynecologist and urologist.

The Engrammes of Psychiatry. By J. M. Nielsen, B.S., M.D., F.A.C.P., Associate Clinical Professor of Neurology and Psychiatry, School of Medicine, University of Southern California, Los Angeles, and George N. Thompson, A.B., M.D., Assistant Clinical Professor of Neurology and Psychiatry, School of Medicine, University of Southern California, Los Angeles. Fabrikoid. Price, $6.75. Pp. 509, with 28 illustrations. Charles C Thomas, 301-327 E. Lawrence Ave., Springfield, Ill., 1947.

The dust jacket of this volume states that the system of biologic psychiatry elucidated within removes all the mysticism of psychiatry which has puzzled physicians in other branches of medicine. This is fine except for the fact that one fears that the psychiatrists themselves will become puzzled on considering many of the concepts postulated in the book. The jacket indicates that "the validities set forth will enable physicians and students to now move in an orderly manner, accurately, and with confidence in this comparatively new field." In the preface the authors indicate their approach by stating that they believe that anatomy and physiology of the brain offer the only true basis for an understanding of mental disturbances! They aim to present in this book the anatomy and physiology of human behavior.

After an introduction, the writers proceed to a discussion of conation, which, they conclude, depends on a motor mechanism made up of "three hierarchies of cerebral structure—the basal one being the periaqueductal gray matter; the thalamic, the ventrolateral nucleus; and the cortical, the rolandic area."

The chapters which follow consider such subjects as consciousness, awareness, attention, the instincts, the emotions, the will and personality. Regarding the instincts, the authors state (page 40) that "the instincts which are present at birth have their neuronal patterns in the diencephalon. Those which require knowledge must await cerebral myelination before they can express themselves; those which require gonadal development must await puberty." On the same page it is stated that the instincts "are the source of all purpose and desire; hence they are the foundation of behavior. Intellect may modify and inhibit instinctive drives but rarely does it set aside the force of an instinct."

It is admitted that quoting out of context may sometimes be unfair; nevertheless it is believed that the following quotations should be considered. In a consideration of free will and determinism (page 48) the authors note in discussing premeditation, and so forth: "As there must be a final appeal, there is no appeal from the ruling of the supreme court. Our rulings in this country by a vote of 5 to 4 in the highest court are mute evidence that the best judgments are differently motivated—the best judges do not have a completely free will." It is difficult to see how court decisions based on an interpretation of the law can become involved in a discussion of free will.

Proceeding through a discussion of some definite mechanism of the mind, the authors discuss the psychoneuroses. They find the dynamic criterion, largely developed by the freudian school, to be of value, and note that the dynamics cannot always be found. They state that "the ability to find them depends largely upon the skill of the person doing the searching. Just as the 'silent areas' of the brain are silent only to those who do not understand their language, so are the psychoneurotic mental mechanisms hidden from the person unaware of their influence on cerebral physiology."

In their discussion of the psychopathic personality, the writers find that the location of cerebral trauma resulting in psychopathy is important but difficult to establish. They discuss cerebral lesions and end by saying: "Nevertheless much clinical experience points to frontal lobe lesions as causes of psychopathic behavior."

In the discussion of schizophrenia it is noted that the early symptoms are apathy or emotional poverty, retraction from environment and so forth. As these indicate to the authors a disorganization within the diencephalon, they state that "we believe that the basic pathology is an engrammatic diencephalic disorganization."

Manic depressive psychosis, involutional disorders and the syphilitic psychoses come in for rather complete consideration. On page 288 one notes that in discussing involutional disorders the authors state that "The pathological physiology is apparently a partial diencephalic disorganization along with endocrinous

involution. The latter reflects in turn on the diencephalic function with consequent depression of function."

There are numerous other quotations which one might utilize to indicate that this mechanistic-anatomic approach misses the point throughout. Very few psychiatrists will concur in the hypotheses expounded or the conclusions drawn, and the book is not recommended.

Entstehung und Früherfassung des Portiokarzinoms: Weitere Erfahrungen mit der systematischen Kolposkopie an der Zürcher Frauenklinik, zugleich ein Beitrag zur Frage der Krebsentstehung. Von Hansjakob Wespi, Chefarzt der geburtshilflichgynäkologischen Abteilung am Krankenhaus Frauenfeld, ehemals I. Oberarzt der Universitäts-Frauenklinik Zürich. Cloth. Price, 18 Swiss francs. Pp. 183, with 94 illustrations. Benno Schwabe & Co., Klosterberg 27, Basel 10, 1946.

Wespi has made a study by conventional histologic methods of the epithelium of the uterine cervix with special reference to cell types which may be considered precancerous. He concludes that adult, fully differentiated epithelium does not give rise to neoplastic cells, but rather that the change antecedent to cancer is in the germinal layer. Evidence is advanced that atypical cells, indistinguishable from precancerous ones, are associated with injury, inflammation and endocrine imbalance, although quantitative measurements of the imbalance are not specified. Emphasis is given to the long period of latency which may exist before a precancerous area develops the power of unrestrained growth. This is, of course, quite in accord with the observation of other groups. The author makes special reference to the multicentric origin of cancer of the cervix. He advances the theory that multiple origin is evidence against the origin of cancer by the mutation of normal cells and in favor of the virus theory. This volume can be recommended to all those interested in cervix cancer as a scholarly treatise of a conventional type.

Fatigue and Impairment in Man. By S. Howard Bartley, Ph.D., Professor of Research in the Visual Sciences, Dartmouth Eye Institute, Dartmouth Medical School, Hanover, N. H., and Eloise Chute, M.A., Research Associate in the Visual Sciences, Dartmouth Eye Institute, Dartmouth Medical School. Foreword by A. C. Ivy, Ph.D., M.D., Vice President, Chicago Professional Colleges, University of Illinois, Chicago. Cloth. Price, $5.50. Pp. 429, with 60 illustrations. McGraw-Hill Book Co., Inc., 330 W. 42d St., New York 18, 1947.

This is a thoughtful and well written introduction to an important and difficult subject. The factors which limit human work productivity and endurance are numerous and complex. Besides such obvious things as physical defects and frank disease states, there are large intraindividual and interindividual differences which reflect innate peculiarities, the immediate environment in all its complexity and the physiologic and psychologic states. The scope of the subject makes it necessary to survey a great variety of facts which are presumably basic to the synthesis which is called human behavior. The result is in part a sort of combination textbook of physiology and psychology with inferences as to application to fatigue. The expert may be impatient with the repetition of familiar facts and may disagree on emphasis. The tyro may often find himself beyond his depth and may wish for more didactic statements of "do's and don'ts." But the book should have much value to the intermediate class —physicians, plant engineers, sociologists, personnel managers and the like. It might have been better if the book could have been delayed a year or two. A great deal of important research from the war period and immediately after is not represented; the references to the literature, such as those on the effects of hot environments and on metabolism and nutrition, are already somewhat out of date in some areas.

Venereal Diseases in General Practice. By Svend Lomholt, M.D., O.B.E., Prof. of Clinical Dermatology, Copenhagen. With a supplement on Penicillin, Mapharside, Sulphathiazole, etc. Fabrikoid. Price, 25s. Pp. 233, with 117 illustrations. London: H. K. Lewis & Co., Ltd., 1946.

This is an English edition of the Danish textbook which has been used widely throughout the Scandinavian countries. Delayed in publication because of the German occupation of Denmark, the book now is out of date, not so much in the clinical aspects of syphilis as in respect to the discussions on therapy. The clinical manifestations of early syphilis are well covered and beautifully illustrated; the late manifestations of the disease, aside from the benign late lesions of the skin, are conspicuously slighted.

Synopsis of Allergy. By Harry L. Alexander A.B., M.D., Professor of Clinical Medicine, Washington University School of Medicine, St. Louis. Second edition. Fabrikoid. Price, $3.50. Pp. 255, with 22 illustrations. The C. V. Mosby Co., 3207 Washington Blvd., St. Louis 3, 1947.

This new edition presents the essentials of allergy in a compact form and includes consideration of topics which have arisen since the first edition was published. These include the so-called antihistaminic drugs, work in vascular allergy, the relation of allergy to infectious diseases and sensitization to drugs and chemicals. These newer subjects are well handled. The section on bronchial asthma remains the best part of the book and is much better covered than any other section. There is an appendix which contains miscellaneous information, e. g., preparation and standardization of extracts, some sources of allergens, description of various methods of testing, elimination diets and tables concerning ragweed distribution and causes of contact dermatitis. The reader is given a bird's eye view of the subject of allergy, but for more detailed instructions regarding particular phases of allergy he must consult larger books or medical articles, a few of which are noted in this volume.

Drawbacks exist. The statement that "the skin test which was looked upon as absolute is now regarded as unreliable" (page 17) implies that skin tests are futile and a waste of time. Nothing is further from the truth, and the author undoubtedly did not mean to imply that skin tests are without value. Every worker in the field know that skin tests, properly done and properly interpreted, represent a great advance in the detection of causes of allergic symptoms; they rank close behind the careful history, examination and clinical trial, and in some cases they actually take precedence. The author, too, has apparently completely accepted the theory that contact between a specific antibody "and the atopen causes the release of histamine (H-substance)." This theory may be correct but has not been proved. The list of materials used for skin testing is fairly complete but should certainly include more molds, karaya gum and May flies. The author states that "frequently only some thirty common atopens are used for routine testing." There is no doubt that when one limits his testing to so few a number he will miss some important reactions. The more different materials used for testing the more the chance of finding something which will lessen the number of so-called "nonsensitive" or "intrinsic" cases. Surgery of the nose and nasal sinuses is advocated a little more strongly in intractable patients than by most allergists. The swing recently is distinctly away from nasal surgery except for purulent conditions, severe obstruction and large mucous polyps. Most allergists do not agree that "specific pollen therapy (for hay fever from tree pollen), as a rule, is not indicated" (p. 118). The section on the various allergic conditions of the eyelids is meager. The section on allergic dermatoses is excellent; allergy to nail polish is frequent and should be included (p. 180). The use of tetanus and diphtheria toxoids should be discussed under "serum allergy." Despite these few shortcomings the book is valuable for medical students and for the doctor who wants information in concise form.

Illustrations of Anatomy for Nurses. By E. B. Jamieson, M.D. Loose-leaf. Second edition. Paper. Price, $3. Pp. 72, with 64 plates. William Wood & Co., Mt. Royal & Guilford Aves., Baltimore 2, 1946.

This handbook for nurses includes a selection of plates from the author's larger work "Illustrations of Regional Anatomy." It is printed on heavy plate paper and spirally bound to open out flat. Although a few slight modifications have been made in the color printing, the full page plates are the same as in the larger work from which they are taken. The book, which is really a hand atlas, is intended for nurses undergoing instruction in anatomy and as a supplement to whatever textbook is used. The plates are unusually clear owing to their somewhat diagrammatic character and to the extensive use of color to differentiate structures and parts. In fact, one could wish that slightly less color had been used or at least that it had been more restrained. Despite the somewhat violent color, the illustrations are skilfully designed and possess a high teaching value. Labeling occasionally departs from commonly used American terminology but is on the whole clear and complete. Nurses will find this striking little volume a valuable quick reference and a worthy addition to their library.

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Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS BUT THESE WILL BE OMITTED ON REQUEST.

IMMUNOLOGIC TESTS IN UNDULANT FEVER

To the Editor:—**What is the percentage of positive agglutination tests and positive intradermal brucellin tests in proved cases of undulant fever. Also, is there an overlapping of positive tests in these cases?**

M.D., Pennsylvania.

ANSWER.—Owing to uncontrollable variability in the disease itself and in laboratory diagnostic methods, the question cannot be answered satisfactorily by a simple citation of published data without considerable qualification.

Lack of a standard antigen for the agglutination test and a standardized technic for its performance introduces errors of considerable size in the determination of the frequency of positive reactions in proved cases of brucellosis. For this reason alone the data in published series are variable. Serums from certain culturally proved infections, estimated from 4 to 10 per cent in acute brucellosis, will fail to agglutinate many different strains, even the one recovered by culture. The agglutination test is more frequently positive in acute than in proved chronic brucellosis. Complete agreement is absent concerning the agglutinin titer level at which significance, or positivity, begins and from below which this is absent.

With these limitations on accuracy in mind, the cumulative totals from published figures on the frequency of "positive" agglutination tests vary from 75 to 95 per cent for acute and 5 to 50 per cent for chronic brucellosis.

With respect to "brucellergen" (brucella protein nucleate) (not brucellin) as the agent for intradermal testing, the producer states that about 5 per cent of those actively infected will not react to it, and that the majority of such persons also fail to show serum agglutinins. The cumulative results of various published experiences with this substance indicate that from 5 to 8 per cent of cases of proved brucella infection fail to react positively, and that this may or may not be correlated with absent agglutinins.

GALACTORRHEA

To the Editor:—**A housewife aged 33 has had galactorrhea for the past six months. Oral atropine to the limit of tolerance has not checked it appreciably. Estrogen in oil temporarily decreased the flow following administration of 20,000 units twice weekly. When this dosage was reduced to once a week galactorrhea reappeared. This woman has suffered from a syndrome which fits exactly the functional hypoglycemia described by Conn (Conn, J. W.: The Diagnosis and Management of Spontaneous Hypoglycemia, J. A. M. A. 134: 130 [May 10] 1947). Apparently this is controlled by a high protein, low carbohydrate diet. Although her gallbladder was removed three years ago she has gaseous distress, bloating and burning sensation following the ingestion of food. These symptoms are relieved by aluminum hydroxide gel ("creamalin" N.N.R.) taken after meals. Three months ago fluoroscopic and radiographic examination of the upper part of the intestinal tract revealed no abnormality. Interesting features of the physical examination are (1) unusually short, but not tapering fingers; (2) excessive hirsutism of the forearms, legs, axillas, linea alba and areolae of the breasts and (3) blood pressure 120 systolic and 70 diastolic and 134 systolic and 90 diastolic on separate occasions. Her last of two pregnancies occurred one year ago. What causes the galactorrhea? What can be done to obtain permanent relief?**

M.D., Colorado.

ANSWER.—Galactorrhea is rare. Stander (Stander, H. J.: Textbook of Obstetrics Designed for the Use of Students and Practitioners, New York, D. Appleton-Century Company, Inc., 1945) and DeLee and Greenhill (DeLee, J. B., and Greenhill, J. P.: Principles and Practice of Obstetrics, ed. 9, Philadelphia, W. B. Saunders Company, 1947) have stated that the condition is "intractable." Its cause has not been determined. In view of the latest information on the sources of lactation one must consider the possibility of some abnormal endocrinal function or tumor, particularly of the pituitary gland but less likely of the thyroid or the ovaries. Both authorities agree that the practical therapy of compression of breasts by tight binders is worthy of thorough trial. Greenhill suggests the use of diethylstilbestrol and androgens. Since this patient has excessive hirsutism, androgens should be avoided. If the simple measures of tight binder and breast support fail, then a thorough study of the endocrinal systems should be made. Special attention should be directed to the pituitary gland for evidence of tumor.

POSSIBLE TABES DORSALIS

To the Editor:—**A man aged 61 has a negative serologic reaction to the Wassermann test, gastric and rectal crises and Charcot joint (neurogenic arthropathy) which is moderately progressive. He has no evidence of dementia paralytica. His mental and emotional condition is not affected. He has reflex rigidity of the pupils and absent knee jerks. The patient had a primary chancre at 19 years of age. He refuses to have a spinal fluid test performed. Please outline treatment. Should examination of the spinal fluid be insisted on? No accurate record of previous treatment is available.**

M.D., Illinois.

ANSWER.—The patient described cannot be intelligently treated without examination of the spinal fluid, including a cell count, quantitative protein estimation, quantitative complement fixation test (not flocculation) and colloidal gold test. Assuming the patient's general physical condition to be satisfactory without serious complicating diseases, the best form of treatment for tabes dorsalis with gastric crises and a neurogenic arthropathy is fever therapy with induced tertian malaria infection combined with simultaneous administration of penicillin, the latter in a total dosage of 6,000,000 to 10,000,000 units. This treatment offers about a 50 per cent chance of relief from the gastric crises and some prospect that further degeneration of the affected joints may be interrupted. Six to twelve months' observation following treatment is necessary to determine its effectiveness. If ineffectual, certain further suggestions might be offered. The treatment of tabes dorsalis is a highly individualized problem. The management of the Charcot joint is largely orthopedic.

LIVER EXTRACT IN PERNICIOUS ANEMIA

To the Editor:—**A patient with pernicious anemia, 72 years of age, has complete loss of vibratory perception, as tested with a tuning fork and loss of proprioceptive sense in the lower extremities. She was not receiving liver therapy at the onset of these symptoms. Is there hope of producing sufficient improvement to enable the patient to walk again? Would 30 units of liver extract weekly constitute an adequate dosage? How long after initiation of treatment could one expect improvement?**

Clifford W. Atherton, M.D., Fairview, Ill.

ANSWER.—Patients with pernicious anemia, bedridden because of neural involvement, often show striking improvement with liver therapy. Not uncommonly such patients walk again and carry on their usual activities. The neurologic response, which is not always predictable, will depend on the duration and degree of involvement. Thirty units of liver extract weekly should be adequate during the early months of treatment. Later, this dose can be given every two to three weeks.

Improvement in cord symptoms and signs may be noted within a few weeks but may not become apparent for six months or longer.

PROSTHESIS FOR NASAL CANCER

To the Editor:—**A patient who will require a plastic prosthesis following radical extirpation of an extensive basal cell cancer of the nose refuses operation unless I can arrange for a prosthesis. Where can this be obtained. She has received roentgen therapy from other physicians without permanent improvement.**

M.D., Ohio.

ANSWER.—A plastic prosthesis is made from an impression of the nose using plaster of paris. If extensive operation is contemplated it is not worth while to take the impression in advance since the contour of the adjacent cheek and lip might change from postoperative contraction of the scar. The impression should not be taken until healing is complete, possibly six to twelve months postoperatively.

Properly constructed and hand tinted, a prosthesis will resemble the normal nose at close inspection. The ready-made papier-mâché type may be employed temporarily to cover the operative field while healing occurs. These are probably not more conspicuous than an adhesive dressing. Such a prosthesis may still be obtainable at one of the regular instrument houses.

IMMUNIZATION FOR TROPICS

To the Editor:—**Occasionally during the fall or winter patients go to Mexico for a vacation. What immunizations are advisable before they make this trip?**

M.D., Colorado.

ANSWER.—Vaccination against smallpox and also for the prevention of typhoid are the most important. Recently it has been reported that evidence of a successful vaccination against smallpox is necessary before entry to Mexico is permitted.

Malaria is another disease which should receive consideration; therefore it might be well to take prophylactic doses of quinine or quinacrine, if the locality which is to be visited is known to be a malarial district.

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PARALYSIS FOLLOWING CEREBRAL HEMORRHAGE

To the Editor:—The blood pressure of a woman patient aged 56 is 155 systolic and 90 diastolic; previously it was 190 systolic. She had paralysis of the eye on the same side as paralysis of her legs and arms. She can now move the arm and can walk, but there remains a partial deadening of sensation, with weakness of the affected side. She can tell when the affected side is touched, but the sense of incomplete feeling is annoying. Is there any treatment?

R. W. Hartwell, M.D., Beaumont, Calif.

ANSWER.—Although the history is insufficient to make an exact diagnosis, there is presumptive evidence that this patient had a cerebral thrombosis in the internal capsule and adjacent areas of her brain on the side opposite to the paralysis. The weakness is due to partial interference with the motor pathways, and her complaint of disturbed sensation probably indicates that the thalamus was also affected. The thalamus is the central site of sensation in the brain and acts as a substation for sensory impulses on their way from the periphery to the cortex. The thalamic syndrome is often accompanied by severer symptoms than those described. Having partial deadening of sensation is a minor annoyance when compared with intense paresthesia or loss of position sense. If the initial onset occurred more than three or four months prior to the description of her symptoms, it is unlikely that further recovery will take place and no known form of medication will modify the course of the disease favorably. Occasionally, phenobarbital given in doses of 15 mg. (¼ grain) aids in stabilizing abnormal sensations during the early period of convalescence.

USE OF PERTUSSIS VACCINE

To the Editor:—1. Has a young unimmunized patient recently exposed to pertussis any chance to avoid the disease? 2. Will pertussis vaccine minimize symptoms of the disease once early symptoms have developed? 3. After whoop develops? 4. In a child who has completed a standard pertussis immunization one month to several years prior to exposure, would (treatment with pertussis vaccine) (*a*) before any cough, (*b*) after coughing but before whooping or (*c*) after whooping has begun have any value?

M.D., Iowa.

ANSWER.—Under the circumstances outlined in question 1, it is doubtful that any preparation injected into the exposed susceptible subject will produce *active* immunity rapidly enough to prevent an attack.

The answer is definitely "no" to questions 2 and 3. A much more rational procedure would be to give a dose of hyperimmune lyophiled human serum, such as that prepared by the Philadelphia Serum Exchange. If exposure is repeated, a second injection of this human serum can safely be given ten days to two weeks later. This *passive* immunity gives fairly good protection for two or three weeks. It should, of course, be followed by active immunization by vaccine of the Sauer type, either plain or combined with diphtheria toxoid in the alum-precipitated preparation.

In answer to question 4, a booster injection of pertussis vaccine in a child immunized some years previously is of definite value if given prior to the development of any symptoms. If given after any cough has begun, its value is questionable.

HORMONES AND MAMMARY HYPOPLASIA

To the Editor:—What information is available concerning the value of estrogenic hormone in ointment for mammary hypoplasia, used externally over the glands? Please give the names of several commercial products that have proved useful in this condition.

Cyrus H. Stoner, M.D., Atlanta, Ga.

ANSWER.—Estrogens are absorbed through the skin from ointments applied topically, but their use as described is not acceptable. This method of administration is wasteful.

The action of hormones absorbed through the skin is a complex one and has effects throughout the body.

Estrogens applied topically to the breasts may produce hyperpigmentation of the nipples and aereolae. This effect may follow estrogenic therapy by other routes as well (Davis, M. E.; Boynton, M. W.; Ferguson, J. H., and Rothman, S.: Studies on Pigmentation of Endocrine Origin, *J. Clin. Endocrinol.* **5**:138-146 [March] 1945).

At present there is no more justification for the use of hormonal therapy for the specific purpose of developing hypoplastic breasts than for similar attempts specifically to influence body height or weight or the size of the genitals.

The complex effects of hormones must always be kept in mind, and in contemplating their use the body must be thought of in terms of the whole rather than in terms of an organ or part.

SECONDARY ANEMIA FROM WELDING FUMES

To the Editor:—Do welding fumes from galvanized iron, stainless steel, copper, nickel and black iron if inhaled cause mild secondary anemias.

Raymond J. Millemann, Long Island, N. Y.

ANSWER.—Exposure to the substances mentioned does not favor the occurrence of secondary anemia. On occasion, lead may be present in traces as an unknown accidental constituent particularly if the metals are reclaimed lots. Under this circumstance, sufficient intake might cause an anemia from lead poisoning. If arc welding is involved and if coated welding rods are employed, coating components may induce anemia. If carbon monoxide is generated, which is unlikely, long exposure may produce a polycythemia. Notwithstanding all that precedes, this type of work under unfavorable conditions is sometimes associated with impairment of health for which diagnosis is difficult. Metal fumes, and notably the fumes of zinc, act as incentives to alcoholism and may produce a distaste for food. A mild secondary anemia may appear without specific occupational cause.

PREVENTION OF MOLD GROWTH ON BOOKS

To the Editor:—The Journal of Nov. 9, 1946 contains a query and answer concerning the removal of must odor from books. The reply states that there is no satisfactory way of inhibiting mold growth in a humid atmosphere. At the request of the Book Collectors' Society of Australia, S. L. Larnach and I published a paper on this subject in the *Laboratory Journal of Australia* in August 1945. Many experiments have shown that there is no growth of fungi when the relative humidity is below 75 per cent. It was therefore decided to investigate the problem of maintaining the humidity within a bookcase below 75 per cent, either continuously or during very humid weeks. As a result of our studies it was recommended that two fairly open meshed bags containing a half pound of silica gel be hung on each book shelf during periods of high humidity. When not in use the silica gel should be kept in an airtight container. After the gel is spent, it can be reactivated by heating it for some time in order to drive out the water vapor.

B. D. Wyke, M.B.B.S., Sydney, Australia.
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[The *Bulletin of the U. S. Army Medical Department*, May 1945, page 28, published the following item on this subject, which was reprinted from *Science* of March 2, 1945: In warm climates following a long rainy spell, book bindings frequently support a heavy growth of mold, which, if unchecked, will disfigure the books. While mere dusting removes the superficial growth, it does not disturb the mold growing in the paste of the bindings. Several years ago, following a wet season, the Duke Hospital Library had an epidemic of mold in bound journals which stood near an underground ventilator drawing air from an open areaway. Duncan C. Hetherington of the Department of Anatomy, Duke University School of Medicine, was called on for suggestions to remedy the situation. The vent was closed and the following solution was wiped over the molded bindings: thymol crystals 10 Gm., mercury bichloride 4 Gm., ether 200 cc., benzene 400 cc.

The treated volumes have never since shown any tendency to mold, and any other outbreaks of mold have been similarly and effectively treated. The solution is poisonous and inflammable and should be used carefully in an open room or outdoors with no source of fire nearby. It is best applied with a cotton sponge tied to a suitable applicator or held by forceps, so that none of it gets on the fingers. The solution penetrates the bindings readily and dries rapidly, leaving no precipitate. One application is usually sufficient, and the books may be returned at once to their places. It is wise to test first one corner of the bindings before using the solution, to discover whether the dye will run or change in any way. In our experience it has not altered the appearance of the goods nor affected the letter stampings. The solution may also be safely used on record album backs, leather boxes and luggage, but it should never be used on any wearing apparel.]—Ed.

PUBLIC HEALTH

To the Editor:—Several physicians have asked me to write objection to the definition of "public health" which appears in an answer to Dr. Gleeten's query about state medicine on page 544 of The Journal of Oct. 25, 1947, and which reads as follows:

"Public health is a form of socialized medicine concerned with special groups and special activities for the protection of the health of the people as a whole."

All of us engaged in teaching the sciences of preventive medicine and their application through tax-supported services resent the inclusion of public health as a form of socialized medicine. It is no more socialized medicine than the public school is socialized education, or the police or fire department of a city a socialized activity.

Public health services consist of the application of the sciences of preventive medicine through government or with its authorization for social or community ends or benefit. Public health departments, local and state, are integral parts of government, based on the democratic organization of society by majority rule through the power of the suffrage and authority to appropriate tax moneys. This is not socialization of medicine nor should it be referred to as a form of socialized medicine.

Please take my gentle objection to heart and do not permit any one to put the label of socialized medicine on public health through the pages of The Journal.

Haven Emerson, M.D., New York.

NOTE.—"Public health" is, of course, "social" medicine.—ED.

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